

# AMERICAN VETERINARY REVIEW.

AUGUST, 1910.

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## EDITORIAL.

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### EUROPEAN CHRONICLES.

PARIS, June 15, 1910.

ROBERT KOCH.—As I am writing this chronicle, a man has just died, at Baden-Baden from complications of arteriosclerosis at the age of 67, whose name is intimately connected with the great scientific progresses that for the last thirty years have modified part of that great science, medicine.

ROBERT KOCH, indeed, has been one among the first who have contributed to the laying of solid foundations upon which to-day bacteriology is built.

Born in 1843, Robert Koch studied medicine, and from the beginning of his professional life, gave himself to the study of infectious diseases. Anthrax is the first that takes his attention and soon he discovers the spores that Delafond had failed to recognize. He shows the possibility of contamination by the intestines. He introduces in bacteriology the use of solid media for the cultivation and separation of microbes.

In 1882 he announces his discovery of the bacillus of tuberculosis, and soon by his tuberculine, gives a process of positive diagnosis of the disease.

He then goes to Egypt and India to study Cholera, and then adds another laurel to his glorious crown by the discovery of the

coma bacillus, the causal agent of the dreadful disease. Those are the principal titles, but how many more?

Grand, indeed, have been the scientific works of Robert Koch. True the great expectations which were anticipated at the many presentations or announcements of his various tuberculines did not realize—true, the opinion that he advanced, held and defended at the various congresses of London, Paris and also Washington were errors which he failed to see—but with all that, scientists all over the world, will acknowledge that with Robert Koch's death disappears one of the great names of our day. He has been the most illustrious bacteriologist of Germany, the one that some of his admirers have attempted to compare and oppose to Pasteur. But to say that with Davaine and Pasteur, he was one of the founders of bacteriology is certainly the most just and highest compliment that can be paid to his memory.

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SUMMER SORES.—In the May issue of the *Revue Generale*, Mr. Drouin, late assistant professor at Alfort, wrote a thorough review on "Granular Dermatitis," the summer sores, which, like all that this gentleman writes, is very interesting. After some concise generalities relating to the climacteric influences and those of the seasons, which promote the presence of this dermatose, the question is put: are summer sores an univocal and well defined pathological affection. Bouley, Rivolta and Laulanié have established the fact of the presence of a parasite in the granulations. It is the *Filaria Irritans*. But where does it come from? Is it an adult individual or an embryo? For Raillit it is only a larva, not a completely developed helminth! It is very difficult to obtain a perfect individual. Fayet and Moreau have, however, and from their studies they consider it an adult individual. Huguier has found filaria free in the blood of horses, and he claims that they are identical to those of granular sores, and although Lingard in his study of the parasites of horses' blood has found embryos comparable to the

*filaria irritans*, experiments carried out by both of these investigators were negative, and yet it seems certain that at a certain period of its development the parasite must exist in the circulatory apparatus. The fact that a summer sore will appear suddenly, without any primitive traumatism, and again that in animals carriers of a first lesion, a second may also develop without apparent cause in another spot of the body, are proofs of it. And again at the autopsies of horses, carriers of filarian sores, the lungs have been found invaded with granular lesions which were well observed and described by Nocard and Drouin, and have allowed to affirm that the parasite of granular sores was susceptible to circulate in the blood to reach the lungs and form embolies.

How does it enter through the skin? Probably by a local inoculation from some insects, bites of flies flying about swampy grounds. Drinking water has also been accused, but it is not likely to be so. The common flies are probably the true agents of the propagation of the filariosis. They attack any kind of wounds, specially the summer sores, then they rush upon others, simple wounds, slightest cutaneous excoriations and after a few days those become granular with all their well known characteristic aspect and their peculiar manifestations of spreading, necrosed structure, prurit, etc., etc. As long as the parasite of summer sores is only an embryo, to what species does it belong in its adult form? Researches are still wanted to settle that question. For Megnin, it is the larval form of the *Oxyuris Gervula*. Railliet advises searching in the life of *Filaria Equina* or among the *Sclerostoma* or the *Spiroptera*. For Fayet and Moreau it has no relation with the *filaria reticulata* of the suspensory ligament.

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After these general considerations, Mr. Drouin arrives to the consideration of the question of the various therapeuties that have been recommended against this rebel affection.

The prophylaxy is quite difficult. Hygienic measures are the only ones available. Watch the condition of the wound, use freely tincture of iodine, keep the flies away, etc. But even with those precautions summer sores will develop.

The review of the curative modes of treatment is extensive. Of course, the internal administration of some drugs has been tried. Arsenic and iodide of potassium principally. If of no great advantages for the sores themselves, they, and principally arsenic has given good results in building up the condition of some debilitated individuals. But as Drouin says, having no means to permit the parasite to be reached through the general circulation, local applications is the proper indication of treatment.

Prevent the animal from scratching or biting himself, which is too often very difficult to realize. If possible keep the animal at work. Protect the wound with pitch plaster, adhesive dressing, acetate of lime paste; wadding bandages are advised by some and objected to by others.

And then comes the application of antiparasitic and antiseptic preparations, the escharotics, the injections directly in the middle of the lesions, the actual cauterization, and surgical interference. Among all those that have been tried, used, recommended and failed may be mentioned: continued irrigations, ether or chloroform sprays, the icebag, naphthaline, formol of Van Es, heated guaiacol, iodosol, permanganate of potash, boric acid, salicylic acid, solution of sublimate, picric acid. The injections of permanganate of 2%, those of iodo-iodurated solution of bicarbonate of soda, and of antistreptococcic serum have also been tried. Potential cauterization with orpiment, biniodide of mercury, salts of copper, caustic paste of Lienaux, etc., etc., and finally the cauterization with actual cautery in points, or better the excision of the diseased tissue. And as in many instances, a large cicatrix remains, likely to interfere with harnessing, autoplasty is then necessary so as to render the animal useful.



The treatment by excision is the one that Drouin seems inclined to prefer, and no doubt many like us, would endorse his views in many instances.

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**CHRONIC BRONCHITIS OF HORSES.**—In the *Scheizer Archives* Prof. Gruter has published on this subject a contribution which is analyzed in the *Annales of Bruxelles*.

After reviewing the veterinary bibliography at his disposal, Gruter studies a special form of chronic bronchitis which he has observed in several horses. They most all belong to animals reformed for chronic and incurable respiratory disease. This form of bronchitis follows an exposure to cold but may also often occur without an apparent cause. The general condition is disturbed, temperature is up to 40° C., pulse 80 and respiration between 50 and 60. The mucous membranes are injected. At first, there is a nasal purulent discharge, which later becomes grey; auscultation reveals in the inferior parts of the lungs some crepitant and whistling râles, and here and there the vesicular murmur is either diminished or abolished. This febrile period is short, lasting four or five days, when then the affection assumes a chronic character. The temperature and cardiac functions return to normal but the respiration remains accelerated; .25 per minute at rest. It is not jerky or double, as in ordinary heaves, and the respiratory functions are neither deep or difficult. Projection of the anus is never present. The wings of the nostrils are very mobile and dilate widely with the slightest exercise. The cough is frequent, strong and dry. It occurs often by spasms and gives rise to severe dyspnea. When the disease is chronic, the nasal discharge disappears. Percussion reveals no pulmonary lesions, auscultation indicates only a diminution of the vesicular murmur. This condition lasts for weeks, but the animal does not get well. It is important to differentiate between dry and ordinary bronchitis, which so often ends in emphysema. At the beginning this differentiation is difficult as the specific signs appear only later. While in dry

bronchitis, the respiration is only accelerated, it is markedly double in the emphysematous horse. In this last, the cough is dry and difficult, while it is easy, although dry also, in dry bronchitis. In this again, there is seldom a nasal discharge, while in an emphysematous animal there is almost always one, specially after work. Thoracic râles are also more abundant and easier to hear in the emphysematous. At any rate the increase in the size of the lungs in this last, renders the percutable portion wide, while the hepatic dullness is pushed more backwards. These last manifestations are missing in dry bronchitis.

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At post mortem, one finds that in dry bronchitis the lungs are depressed, the coloration is normal: the pulmonary tissue is elastic and may here and there show some small spots where this elasticity is reduced. These spots are found in the thickness as well as on the surface of the pulmonary structure, they are irregular in their outlines and firmer and heavier than the normal tissue. When the lungs are taken out of the thorax and are percussed, they give a normal sound except in the diseased spots where there is a dull sonority. In animals sick only since a short time, the spots above alluded to, have on sections a greyish red coloration, and in old cases this coloration is yellow or even white. Recent lesions allow, on being squeezed, a greyish red liquid escape, with, from the fine ramifications of the bronchia, a greyish clot. White spots give no liquid when squeezed, although the fine bronchia are obstructed by contents similar to those of recent lesions. Seldom are lesions of the large bronchia found; bronchiectasie is missing. Pulmonary pleura is normal, the bronchial glands somewhat swollen, but never with softening. With these exceptions the pulmonary parenchyma is but little altered and is free from emphysematous pouches.

The microscopic examination reveals lesions which are against the name of dry bronchitis as it demonstrates that the diseased

bronchia contain a rather abundant product of secretion and for this reason Gruter prefers the name of **SCLEROSING BRONCHITIS** and **ALVEOLITIS** to that of dry bronchitis.

In conclusion, Gruter says that besides chronic bronchitis which brings on emphysematous lesions, there is another form which differs from it by its clinical and anatomical characters. Although this other form gives rise to a lasting dyspnea, it does not promote lesions of heaves but indurated centers in the pulmonary tissue, due to interstitial inflammatory lesions with marked proliferation of the connective tissue, destruction of the alveolar epithelium and occlusion of the alveoli. It is probable that this form of bronchitis develops under the influence of agents with specific action upon the connective tissue and the alveolar epithelium.

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**INTESTINAL CONGESTION IN HORSES.**—Every practitioner knows of this ailment, which attacks horses so suddenly and is classified among the diseases of the digestive canal as a morbid entity, well characterized to the clinical point of view by the excessive injection of the mucous membranes and the severe abdominal pains that are manifested by the violent colics, which generally are observed in animals, overworked by excessive labor. Very commonly fatal, the lesions that are found at post mortem are characteristic and described as follows by Petit: "They consist in being located in and more particularly affecting, the cæcum and colon. These are of a dark and red color with the mucous membrane disorganized and transformed into a blackish red clot. The liver looks like as it had been cooked, the spleen is enlarged, soft and black on section. The insertion of the blood vessels of the intestines is surrounded with a bloody exudation, sometimes quite abundant. At times, however, it is upon the stomach or in the small intestines, together or separately, that lesions are found. The urine is more or less highly colored or perhaps with a coffee tint; the heart is yellow and easily torn; the left endocardium is covered with sub-serous hemor-

What could be the causes of such serious diseases have evidently been the question that pathologists have endeavored to settle. And actually there are two propositions existing concerning the etiology of intestinal congestion in horses. The first, originated by Bollinger, recognizes thrombosis of the colic arteries as the cause. The thrombus being formed by a clot organized in a verminous aneurism of the great mesenteric artery. In the second, MM. Petit and Lingnieres say that it is impossible to explain the genesis of the lesions in any other way than by the action of a microbial toxine. Lingnieres indeed placing in the intestinal mucus the origin of this toxic secretion which he attributes to a microbe, yet not discovered.

Prof. Carré not endorsing these theories and continuing the researches that he had been making on the Preisz-Nocard bacillus and diseases of sheep has finally recognized the specific agent of intestinal congestion of horses, and presented the result of investigations before the Academie des Sciences, which were resumed concisely in the *Revue Generale* of last April, viz.: to the effect that the examination of the reports of autopsies made of sheep that had died from acute cachexia, red ailment or toxine of Preisz-Nocard bacillus proves the absolute identity of the lesions found then with those that are made in horses, dead because of intestinal congestion.

At first Mr. Carré had been unable to obtain with certainty the seat of culture of the microbe by looking into lesions from sheep dead with the natural disease. But later he had two lambs sent to him in a dying condition. They were killed, and in them all the characteristic lesions were found and pure cultures of Preisz-Nocard bacillus obtained with blood taken from the heart. Then in succession Mr. Carré had at his disposal, four horses suffering with violent colics of intestinal congestion. These were bled at the jugular, and their blood used for cultures in bouillon. Two horses recovered. The others died having the typical lesions of intestinal congestion in the digestive canal and in the heart. Cultures of Preisz-Nocard bacillus were also obtained with their blood.

From these Mr. Carré concludes: 1. Intestinal congestion of horses is not a disease of the digestive canal; it is a general infection of the organism due to Preisz-Nocard bacillus and the lesions observed are due to a toxine secreted by the microbe; 2. The name of intestinal congestion is altogether improper, as the intestinal lesions may be altogether very slight or even be entirely absent, the toxic action being manifested only upon the stomach or the heart.

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TRANSMISSION OF TUBERCULOSIS BY INHALATION.—This question has already been discussed many times, and whether it is settled at last remains a question. However, the following extract of the experiments of Kuss and Lobstein recorded in the *Bulletin Medical* may prove of interest.

Recalling the recent investigations that have been made in relation with the contagion of tuberculosis, they compare the two theories, that of the respiratory and that of the digestive entrance and notice several of the contradictions existing between those that have made the experiments.

On one side, Tappeiner, R. Koch, Cadeac, Preyes, Cornet, Nocard, Flugge consider direct inhalation as the ordinary mode of infection; while again, Behring, Chauveau, Vallee, Calmette and Guerin, Willemin, Petit and Laudet, Hartl and Neumann, Weichselbaum and Bartel accuse ingestion, if not exclusively at least in a predominant manner. Kuss and Lobstein try first to know the value of the means of defense of the aerial tracts in the physiological condition and to this effect, they experimented on guinea pigs; they show as evidence the facility with which the fine atmospheric dusts reach the pulmonary alveoli, and they demonstrate the exclusively aerogenous origin of the physiological pulmonary anthracosis and of the pneumoconiosis. Again they show that the fine droplets of the atmosphere are also easily and directly inspired, way in the finest ramifications of the respiratory tree, contrary to the opinion advanced by Saengen of Magdeburg.



Further on they demonstrate that a bacilliferous spray must be made of exceedingly fine droplets for inhalation to succeed; animals must be prevented from licking the surfaces upon which the bacillus may be deposited, as otherwise instead of inhalation it would be ingestion that would take place; neither will animals be allowed to stand under the direct spray of the atomizer; the inhalation must be of short duration, and while thus experimenting other tests of ingestion should be carried on simultaneously. Chauveau has told Kuss and Lobstein a way to carry an experiment. Two guinea pigs inhaled together from half a liter of a volume of air, in which a given quantity of human tuberculous culture is atomized. To carry parallel experiments of ingestion, other pigs are fed with a mash of carrots carrying pulverized virus; 34 guinea pigs were used in the experiments.

The results of the INHALATION have been generally a pulmonary tuberculosis of exceptional severity; hepatic and splenic lesions not secondary; mesenteric lesions were always slow to develop; from 33 to 50 days, while the pulmonary were observed after 14, 9 and 10 days, with spleno-pneumonia rapidly fatal. Cervical glands had lesions sometimes.

Experiments of INGESTION were as rigorously carried out as those of inhalation, but with doses of bacilli much larger. Notwithstanding all, with one exception, remained harmless. The only diseased pig had only mesenteric lesions.

Such was the balance compared between infection by ingestion and by inhalation.

In other experiments 11 guinea pigs took with their food doses of human tuberculous bacilli, doses varying between one-half a centigram and 100 centigrams. None of them became tuberculous. Again 14 other animals were given with oesophageal probang from 5 to 100 centigrams of human bacilli; two only had mesenteric, hepatic and splenic tuberculosis, and one of those slight secondary pulmonary lesions.

Experiments with subcutaneous injections were less successful than those by inhalation.



CONCLUSIONS. 1. Inhalation, infects the organism by direct penetration of the bacilli in the pulmonary alveoli; 2. It constantly gives rise in guinea pigs to tuberculosis which develops rapidly; 3. Ingestion of an equal quantity of bacilli is generally harmless; 4. Tuberculosis by inhalation appears first and primitively under the form of pulmonary infection; 5. Transmission of experimental tuberculosis takes place much more easily by way of respiratory than digestive entrance.

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THE PHYSIOLOGY OF THE THYMUS GLAND.—Our knowledge on the physiological action of this gland is far from being complete, notwithstanding the enormous amount of experimental researches which are recorded in scientific papers. But the results of these experiments, which have principally consisted in removing in animals the thymus gland or in destroying it either with X-rays or specific thymotoxic serum, have not always given identical results. Possibly because, the condition of the experiments have not been the same in all cases or the species of the animal differed or perhaps possibly their age. However, there has been recorded lately some which were made upon animals of a same litter, very young, and at a period of life where the gland possesses the maximum of its functional activity; and which have permitted to add a valuable document upon the physiological action of the thymus. The experiments that I allude to have clearly demonstrated that in animals in which the thymus has been removed, the process of growth is kept back and manifested by a diminution in the weight of these animals comparatively to that of witness animals of the same age.

This difference in weight appears from the first days after the operation and reaches its maximum in about one month later. It is so much more marked as the operated animal is younger. For instance, when the operated animal weighed 735 grams and its witness 745, the difference after 23 days was not over 230 grams. In another experiment made upon 3 rabbits,

having respectively weights of 540, 543 and 564 grams, the difference in these weights compared with those of witnesses, made one month after the operation, was from 300 to 400 grams. And again if very young rabbits were used for the experiments, the



On the right, pelvis of a rabbit, whose thymus glands have been removed; on the left, the witness.

differences that were observed to be, between 6 weeks and 2 months after the operation, were relatively considerable and varying between 450 and 600 grams. However, this difference in the weight is often only temporary and passes away later, the operated animal regaining back its own weight, and even gaining beyond that of the witness.

That there is a moment of arrest in the growth principally, if not exclusively upon the skeleton is very evident. The changes in the bones consisting in a single reduction in the size and dimensions as shown here.

The bones look delicate, their normal projections and crests for muscular insertions are less marked and appear smaller. Their curvatures are not changed, and their intimate structure, studied with radiography, presents no noticeable alterations, except a slight degree of thinness in the canals of Havers. Analysis shows that the quantity of lime remains normal and the hardness of the bony pieces does not seem altered. These modifications are particularly more marked in some special bones, such as the lumbar vertebrae, the pelvis and the shoulder. They remain such even in operated animals or also go beyond that of the witness. To resume, these last experiments have shown that the thymus, while playing during the first years of life a part in the general executions of the functions of the organism, has not the importance of the other vascular glands, and its removal or disappearance in young animals do not interfere with their ultimate development.

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ONCHOCEREAS.—Under that name, in 1841, Diesing created a gender for a nematod parasite discovered by Bluiveiss of the Veterinary Institute of Vienna, and was found in the coats of the collateral artery of the cannon, and in the suspensory ligament of the fetlock of horses. This parasite was afterwards classified as the gender *Filaria* or the *Spiroptera*. But recent works from Railliet and Henry have demonstrated that *Onchocereas* ought to form a special gender of the family of the *Filarideas*.

Animals of this gender are characterized by their thick cuticle striated crossways and strengthened outwards by spiroid or ring-like thickenings, wider apart in females than in males. This last has two unequal spiculae and caudal papillae often symmetrical, but always with a group of four papillae surrounding the

cloca on each side. Females are very long, with a spiroid body, a vulva situated near the anterior extremity. They are viviparous.

These parasites are found in the elastic and fibrous tissues and in subcutaneous on intramuscular connective structure of mammalia.

According to Railliet and Henry there are five well known species:

1. *O. RETICULATA*, which lives in the suspensory ligament of the fetlock, the tendons of the flexors of the foot, the coats of blood vessels and the subcutaneous connective tissue of the region of the tendons in horses.

2. *O. CERVICALIS* found in the cervical ligament (*Ligamentum nuchae*) of horses. It is rather common.

3. *O. ARMILLATA* occupying the internal face of the middle coat of the aorta of cattle, zebu, and buffaloes, in India and Sumatra.

4. *O. FASCIATA*, discovered in the subcutaneous connective tissue of the head of a camel in Punjab.

5. *O. VOLVULUS*, extracted from the subcutaneous fibrous nodules of man in occidental Africa.

According to Prof. Neumann, however, there is another species to which he has given the name of *Onchocerea Gutturosa* on account of the peculiar cervical dilatation of the body and of which specimens had been sent to him from Algeria. It seems that the parasite is not rare among Algerian and Tunisian cattle, and that it is always found on the cervical ligament, on a level with the second and third cervical vertebrae. There are small tumors from which it is difficult to extract them. Similar conditions have already been described in cattle of various countries, they are frequent in Australia and in Java; and as generally animals do not seem to be disturbed by them it is only at post mortem that their presence is detected.

Onchocerosis has been observed in animals of all ages, in subjects varying between two and three years. Their meat is perfectly safe to use. The etiology of this disease is yet unknown, but it is supposed that, as is the case in filariosis, the disease is transmitted by sucking insects. The study of the entire subject

is only at its beginning. Other researches are necessary to complete it.

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**PREPUTIAL DISCHARGE IN DOGS.**—In several numbers of the *Il Nuovo Ercolani*, Prof. Cinotti has published the long and serious series of studies that he has made of this somewhat frequent, although simple affection of dogs. He has given a thorough study of the sheath of dogs, and principally of its lining, mucous membrane, which covers the free portion of the penis, and which is principally free from glands structure but which is very rich in lymphatic follicles. The author has also carried a large number of experiments in relation to the contagious character of the discharge, its transmissibility and nature, and closed his remarks with conclusions which are of great interest.

**Conclusions.**—1. The preputial discharge of dog is due to a chronic purulent balanopostitis, kept up by common pyogenic agents, whose virulency is neutralized or greatly attenuated by the presence in abundance of existing lymphatic elements, of various forms, in the internal laminae of the prepuce and extremity of the penis.

2. To the common pyogenic agents are associated others of indifferent forms, not only the bacillus subtilis, which perhaps in the peculiar condition where it is, may acquire a pathogenic power, yet limited.

3. Infection of the parts takes place with facility by the entrance of the micro-organism in the preputial cavity, through the external orifice and after passing through the bone are carried to the penis in total or in part when it is brought to the uncovered part of the sheath.

4. The infection is frequently renewed, and the morbid state is kept up in its chronicity as long as a favorable condition of dampness and heat are met with by the micro-organism in the preputial sac.

5. The disease has a benignant character, and is not transmitted experimentally from dog to dog, except very rarely. It is ordinarily cured spontaneously, and is not transmissible from

male to females, because either from the attenuated virulency of the microbes of the material of the discharge or from the special condition of organic protection of the vagina of the slut.

6. The benignity of the bacterian flora is not represented in its constituents, but is due to the special condition and antivirulent action of the lymphatic secretion (respectively lymphocytes), which is secreted in the preputial sac.

7. The relative and temporary efficacy of the recovery is independent of the facility of reinfection and specially from the peculiar conditions of the intimate structure of the membrane lining the inside of the prepuce and of the penis, which by their condition render difficult the application of drugs upon the micro-organisms in the folds and more especially the sinuosities of the papillar body of these membranes.

A. L.

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#### ON TO SAN FRANCISCO.

The excellent program of the forty-seventh annual meeting of the American Veterinary Medical Association published in this month's issue of the REVIEW, under society meetings, bears out the REVIEW's forecast of many months ago, that "the approaching meeting of the American Veterinary Medical Association at San Francisco would surpass the expectations of its most sanguine advocates," and gives evidence of the unceasing efforts of its able secretary and members of the local committees to make it the success that is now assured. For what greater assurance of the success of a meeting can be had, than the enthusiasm with which its members enter into the making of the program! It not only indicates the great amount of enthusiasm in the coming meeting from the four quarters of the universe from which the program is made up, but the program itself attracts others to a realization of the great scope of the organization, the importance of the subjects dealt with, and the fact that the leaders in the veterinary profession, men of national and inter-



national fame are among those most earnestly engaged in the work. In addition to the assurance of success deducted from the dimensions, character and scope of the program proper, the opportunity of seeing the great country west of "Rockies," visiting some of the famous cities of the North West under the favorable conditions offered through being a part of the convention, and, finally, of visiting beautiful California at a time when pleasant and familiar faces of friends and neighbors are seen on every side, and the city of San Francisco welcomes you as one of its own, are all factors that lead to the conclusion that the A. V. M. A. convention of 1910 makes an opportunity for every veterinarian in America to visit the Pacific Slope under conditions that are not likely to be presented to him again in his lifetime.

To the great number of veterinarians who have realized that fact, and are planning to take advantage of this opportunity, we desire to call attention once more to the great advantages of traveling on a special train. One that will be made up of cars with the most luxurious type of railway equipment; sanitary standard sleeping and compartment-observation Pullman cars. Your own baggage car, in which no one's baggage but those of your own party will be carried; a dining car in which you will feel at home because in it you will meet no one except an A. V. M. A. conventionist. A train *exclusively* for the members of the A. V. M. A., their families and friends.

To each one of you gentlemen, we desire to say, that it lies entirely with yourself whether you travel thus exclusively, or go in a special car or cars on a regular train. You have probably decided already that the special train is an ideal way of traveling and that you will be glad indeed to go that way; but unless you write Secretary Lyman *at once* and tell him you want to be a member of the party going by the special train that goes out of Chicago 6.15 p. m., August 30, he cannot arrange for the special train in advance. It is essential that he have an expression from a hundred members of their intention of going by that train before he can secure "a special."

Five hundred may be at Chicago on the evening of August 30, desirous of going by special train and enjoying its comforts and privileges, but it cannot be arranged unless at least a hundred of them have expressed their desire to travel that way beforehand. Write *your* letter *now* on receipt of this number; do not even chance delaying until the next day, you may forget it. Secretary Lyman's address until he starts for the convention is P. O. Box 901, Hartford, Conn. HURRAH FOR THE AMERICAN VETERINARY SPECIAL!

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#### PAST PRESIDENT OF A. V. M. A. DECORATED BY KING GEORGE.

Dr. J. G. Rutherford, the most recent past president of the American Veterinary Medical Association, who presided over the 1909 meeting at Chicago with such dignity, and who caused the creation of an International Commission for the Study of Methods of Control of Bovine Tuberculosis, which had its birth at that meeting, was among those honored by King George on the occasion of the birthday honors bestowed on June 23, when our distinguished confrère was created a C. M. G. (Companion of St. Michael and St. George), in recognition of the distinguished services rendered the Dominion of Canada as head of the veterinary branch of the federal department of agriculture. This is an honor conferred upon few, and we congratulate Dr. Rutherford in the name of the veterinarians of America.

THE NEW YORK STATE VETERINARY MEDICAL SOCIETY will hold its annual meeting at Ithaca the fourth week in this month, Thursday, Friday and Saturday, 25th, 26th, 27th. The outlines of the program were published in the June REVIEW. Since then a number of additions have been made; and, with the excellent clinic *always* furnished by this society, it offers attractions to the veterinarians of New York and neighboring states that foretells a large gathering on the campus at picturesque Ithaca.

## ORIGINAL ARTICLES.

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### RABIES AND ITS METHODS OF CONTROL IN NEW YORK STATE.

BY J. F. DeVINE, CHIEF VETERINARIAN, DEPARTMENT OF AGRICULTURE.

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Rabies or Hydrophobia, which of late has exacted considerable attention in this State, is by no means a disease of recent origin since it seems to have been recognized as a distinct disease before the Christian era. Aristotle wrote of this disease in dogs as follows: "Dogs suffer from madness. This induces a state of fury, and all animals which they bite, when in this condition, become also attacked by madness." Other early writers who refer to this disease are Virgil, Horace, Plutarch and Ovid.

In the first century Cornelius Celsus recognized this disease in man and called it Hydrophobia. The first appearance in this country seems to have been in the latter part of the eighteenth century, but literature of older countries goes to show that this scourge visited different localities of such countries at different periods for the past twenty centuries, with evidences of its specific character.

**NATURE AND CAUSE.**—The nature and cause of this disease, like many other specific diseases, were confusing and misunderstood by scientists and investigators until after the middle of the eighteenth century, when leaders in medical and biological sciences (Pasteur probably standing out most prominent of these), determined its specific character. It is regrettable, however, that many laymen still look upon this disease with doubt as to its being specific. It is still more regrettable that this doubt

is, in most cases, probably directly or indirectly due to the expressions of such physicians and veterinarians who have not been brought face to face with the dreadful phenomena of this disease. We, however, must expect such opposition until time puts the sciences of biology and bacteriology on a more firm footing.

When we consider that there are still some physicians who doubt the specific character of small pox and scarlet fever, simply because the bacteriologists have been unable to isolate and point out the specific organism which causes these diseases, then we are not surprised that there would be some disbelievers in a disease that has not been, in any comparison, nearly as prevalent as the two just mentioned. The organism of rabies is probably one of the so-called ultra microscopical organisms. Still it has been proven beyond a shadow of a doubt by experimental inoculation, that it is specific in character.

Again medical men will state that they do not believe that there is such a thing as rabies since they have been in practice for perhaps 15, 20 or 25 years and have never seen a case. This argument is equally as wanting in logic, since it is very probable that the same medical men would need to admit that they have never seen a case of glanders or leprosy in the human family, and I doubt if they would argue that there are no such diseases.

Any one particularly desirous of seeing an individual affected with this awful malady could very probably do so any year by getting in touch with laboratories where this disease is treated.

Again, some are of the opinion that the disease may arise spontaneously, and that it is liable to crop out at any time under peculiar and favorable conditions. This opinion is probably greatly due to the indefinite period of incubation as well as the number of inoculated animals that may be left in the wake of a dog during the maniacal stage; particularly if much of its furious march has been made during the night when the owners and care takers of animals would be resting in their beds while their property was being attacked. It would be as ridiculous to believe, with our present knowledge of bacteriology and pathology, that rabies could arise spontaneously, as it would be to believe

typhoid fever, tuberculosis or any of the other specific diseases would develop spontaneously; or as it would be for us to believe that we could grow a field of wheat if we did not sow wheat or grow a field of corn if corn were not planted.

Rabies is a specific, communicable disease, which can be communicated to all mammals by inoculation with the specific virus. This specific virus is present in the saliva of animals affected with the disease, and is transmitted to other animals and persons usually by a bite. It may, however, be transmitted through the saliva without a bite, if there is an abrasion, in the same manner as any other inoculable disease.

Rabid virulence has also been observed in the upper renal capsules, in the urine, spermatic fluid and lymph. It has been stated by Friedberger and Fröhner that the blood is never virulent. The possibility of its being transmitted through the placenta seems to have been established by several observed facts and by few experimental results. This question, however, is yet under investigation. Perroncito and Curito have succeeded in infecting a guinea pig by inoculation of the spinal marrow of a young rabbit which was the offspring of a rabid mother.

A point which is of distinct interest to us seems to have been settled by Nocard, as he states he has "never succeeded in transmitting Hydrophobia by the digestive tract, and even after animals have at different times ingested considerable quantities of virulent nervous matter." Among the experiments which he has made upon this subject, the following is particularly interesting: "Within two months a young fox had eaten, without becoming infected, the brain and spinal cord of twelve rabid dogs. He was, however, not refractory, and had not acquired immunity, for later he died from Hydrophobia, which was inoculated by trepanation." (By making a small opening through the skull into the brain.)

Galtier admits the possibility of infection by the digestive passage, by ingestion of saliva, milk or meat coming from a rabid animal, but no fact has yet been established that ingestion of rabid milk or meat has ever produced the disease. How-

ever, the intra crania inoculation of milk has given positive results.

The apparent lack of danger of milk or a product which might be manufactured therefrom, through the digestive tract, would seem a point of knowledge of particular advantage to us since the veterinarian is frequently asked as to the danger of these products where a bovine animal develops rabies during the period of lactation.

The idea is quite prevalent that dogs are particularly liable to go mad during the so-called dog days which extend from the first of July to the middle of August. They are called dog days because they cover the period of time when the dog star Sirius is above the horizon with the sun, and of course, have no connection with the disease whatever. All who have made any observation on rabies know very well that the time of the year or the climatic conditions have little or no influence on the disease, other than that in extreme cold weather a rabid dog on his march would not be as liable to come in contact with as many of his own kind, since the latter would be more apt to be seeking shelter during such weather. This is equally true during the season of deep snow, a rabid dog becoming exhausted much quicker and not being able to travel nearly the distance that he could in pleasanter weather.

**PERIOD OF INCUBATION.**—The period of incubation is very uncertain in its duration. It rarely, if ever, appears by natural inoculation in less than 12 days, although it has been produced by inoculation of fixed virus in a rabbit in six days, and it may extend from such a short duration to the period of a year or more. The usual period, however, in a dog is from three to six weeks. This variation in the period of incubation is indeed one of the serious drawbacks in controlling the disease and preventing its spread when once introduced in a territory. The location and character of the bite in the human family has been found to influence materially the period of incubation. Since it is now pretty well agreed upon that the virus travels along



the course of the nerves rather than by means of the blood current, the nearer the point of inoculation is to the nerve centers the shorter the period of incubation. To illustrate, we know positively that an inoculation or a bite about the face or head is always attended with a much shorter period of incubation than one on the extremities. We also know that the severer the inoculation or bite, tearing into the muscles and extending deeper on the nerve structures, the surer the infection and the shorter the period of incubation. Helman states that "Hypodermic inoculation gives more numerous positive results in emaciated animals than in those in which the integuments are well covered with adipose tissue."

**SYMPTOMS AND DIAGNOSIS.**—Symptoms differ slightly in different animals. We will take the dog as a subject. In symptoms we recognize two forms of the disease, one known as the Furious and the other as the Dumb or Paralytic, which, however, usually succeed each other in fully developed cases; yet the furious phenomena may be entirely omitted and again the victim may die in the early furious stage so that the paralytic stage does not appear.

The prominence of the one form or another probably depends greatly upon the location of the point of inoculation, the character of the injury and the virulency of the virus. The premonitory symptoms are in the main the same in both type. Fortunately if we are familiar with the disease it often enables us to recognize it before the period of extreme danger.

It is well to impress upon the public the fact that the name hydrophobia is a misnomer in the dog, and that it is absolutely erroneous to believe that dogs would not go near water, since it is not an uncommon thing to see such an animal ford a creek and readily attempt to drink. While the symptom of fear of water is usually a marked one in the human subject, it is never present at any stage in the dog. Even after the animal's throat becomes completely paralyzed the animal will attempt to drink water.

The symptoms of the Furious form are briefly as follows:

FIRST STAGE.—Change of disposition and habit. This is perhaps one of the most constant symptoms we have. A dog that has been particularly playful and affectionate is apt to become indifferent or sullen. A house dog that has been accustomed to caresses and attention will probably seek seclusion in dark corners under a couch or table and the like. Dogs that have been what we term out of door dogs or indifferent in nature show as decided a change in disposition in courting attention or something equally as noticeable. There is also apt to be a morbid appetite, searching and scratching about, licking cold stone or metal, gnawing at the point of inoculation if it be in a region that can be reached with the mouth, hideous howling, baying at the moon, melancholy, hopeless expression of countenance and perhaps not exhibiting up to this time any disposition to bite. Another symptom which is particularly noticeable when present is the change in voice. Different writers have tried to describe this change, and we convey some idea when we say that it is possibly a half bark and half howl or cry of distress. Any or all of these symptoms may appear during what we term the first stage of the Furious form.

The second or maniacal stage is ushered in by more pronounced manifestations of the above symptoms, everything becoming gradually and greatly exaggerated; insomnia, restlessness and delusion, watching and snapping at things. The infected animal may now be excited into a fury by annoying it or shaking a stick at it. A pretty reliable test ordinarily at this stage is the bringing of another dog into its presence, which is quite apt to make the rabid animal act very furious. As the disease advances there is more and more of a haggard appearance. The eyes become reddened and even a careless observer will note the dejected look. The disposition is now of a wandering character. The animal wanders off long distances, perhaps 10, 20 or 30 miles and snapping as it travels at man or beast. If not interfered with on its tramp or if exhaustion or death does not overtake it, it is quite apt to return. In its wanderings

the tendency is to attack every dog in sight without much warning, growling or barking, and it is peculiarly characteristic that when attacking a dog it does so slyly and not with the ordinary noise of the fighting well dog. It shows no great desire to fight, but exhibits more of a feeling to snap at and worry another dog for a minute and then go on. It seems to have a preference for biting dogs rather than other animals or persons. In other words, it might deviate considerable from its course in order to attack another dog, but is not likely to do so to attack a human being. It is even probable at this time that if it were in reach of its master's voice, that its action could be controlled to a limited degree, depending upon the discipline the dog had been accustomed to. It is not an uncommon thing to see a confined rabid dog, even in the maniacal stage, very much soothed and quieted by a visit from its master.

The premonitory stage and maniacal stage have perhaps consumed a period of from two to five days and in the course of a day or two more, or occasionally less, the disease advances into general paralysis or what is termed the Paralytic Stage, and death.

**DUMB OR PARALYTIC RABIES.**—The striking peculiarity is an omission of the preliminary furious stage as the disease merges into paralysis after the premonitory symptoms. These cases tend to immediate prostration and weakness and dullness or stupor. Paralysis of the masseter muscles and dropping of the lower jaw seems to be, perhaps, one of the most notable symptoms after the first stage. From this the paralysis extends to the hind limbs and then to the forelegs and trunk. The dog has a decidedly haggard look with the lower eyelids drooping, lying quiet and helpless until relieved by death, which comes usually in two or three days.

It will be seen from the study of these symptoms that the dog which has acted perfectly well and suddenly acts strangely, perhaps falling down and frothing at the mouth, etc., is not the mad dog but is far more apt to be affected with epilepsy or some

similar benign complaint, and it is equally as important to note with care the strange action of any and every dog in any district where rabies is prevalent or where there seems to be a possibility of infection.

**POST MORTEM.**—In rabies there are no absolutely characteristic post-mortem findings. The stomach has perhaps more significance than any other organ examined with the naked eye. The mucous membrane of this organ is frequently congested, and in some cases marked inflammation is present. Foreign bodies, as sticks, straw, coal, stones, etc., are sometimes present, and an absence of food, coupled with an authentic history would strongly indicate that death had been due to rabies. Closer observations sometimes reveal meningeal congestion; or redness of the pharynx or larynx. Again a negative post mortem with a history of rabies is always suspicious.

**LABORATORY DIAGNOSIS.**—Microscopical examination has recently largely superseded animal inoculation. The latter method, while of great value when carried on carefully, has the serious disadvantage of delay. Microscopical examination of the nervous system had its origin in 1875. Babes in 1892 discovered what have since been called Babes Tubercles. In 1900 Van Ge Huchen and Nelis described changes in ganglionic cells, being most marked in the plexiform ganglia which meant much to the medical world in the age of rapid diagnosis of rabies.

In 1903 Negri of Italy described what are now known as Negri bodies. The constancy of these bodies found in the hippocampus major and the association of these bodies with rabies has been confirmed by many investigators. Moore of Cornell states that "if these bodies are not the cause of rabies they are surely a specific degeneration resulting from the disease."

**METHODS OF CONTROL.**—Since rabies is almost always caused by a stray dog which suddenly appears in a community biting dogs and other animals, perhaps persons, the only method of merit known to-day to prevent the spread of this disease is confinement and seclusion or muzzling the dogs in the exposed territory. To

show what an effective remedy muzzling is, it is interesting to note the data furnished by Great Britain. In that country the number of rabies cases reported for each year during a period of twelve years is as follows:

*Muzzling Not Required.*

1887, number of cases, 217

1888, number of cases, 160

1889, number of cases, 312

*Muzzling Required.*

1890, reduced to 129 cases

1891, reduced to 29 cases

1892, reduced to 38 cases

*Muzzling Not Required.*

1893, number of cases, 93

1894, number of cases, 248

1895, number of cases, 672

*Muzzling Required.*

1896, number of cases, 438

1897, number of cases, 167

1898, number of cases, 17

1899, number of cases, 9

a reduction, as will be seen by statistics in the period of four years, from 1895 to 1899, from 672 cases to 9 cases, and I understand by this method the disease has now been completely stamped out. This has proved positively that dogs are the greatest carriers of rabies and by controlling the dogs we control the disease.

METHODS IN NEW YORK STATE.—When the presence of a supposed rabid dog is reported in a locality, such report is immediately investigated. If the animal has died or has recently been killed, the brain is taken, and, if in a fit condition for examination, is sent to the State Veterinary College at Ithaca, where an examination is made. If the Negri bodies are found, the case is reported positive to the one sending the brain, if such person is known or if the container has been properly marked, and a

similar report is also sent to the Department of Agriculture. If no Negri bodies are found, animal inoculation is resorted to for verification.

The question of the necessity of a quarantine is immediately investigated, which depends somewhat upon whether or not other animals have been bitten or exposed. The method pursued for getting such information is by communicating with the Local Health Officer and the Assistant Commissioner of Agriculture having jurisdiction over that territory; and if the facts warrant it, upon their recommendation the Commissioner of Agriculture immediately lays quarantine upon such area as seems advisable.

Chapter 352 of the Agriculture Law, as amended, reads in part as follows:

If the commissioner shall lay a quarantine upon a city or any portion thereof, he may call upon the Commissioner of Public Safety and the Police Department of said city to enforce the provisions of any notice, order or regulation which he may prescribe within the quarantine district, and all expenses so incurred in enforcing the quarantine shall be a city charge. If the commissioner should quarantine any town, village or district other than a city, he may call upon the sheriff, under sheriff or deputy sheriff to carry out and enforce the provisions of any notice, order or regulation which he may make. All expenses so incurred shall be a county charge.

As soon as it has been determined that a quarantine is necessary for public safety, notices are at once printed and sent to the proper officials for posting. Such notices state in part:

*"First*—That within this district all persons who own, have charge of or harbor dogs, shall so seclude, confine or muzzle such dogs as to make it impossible for such dogs to bite or inoculate other animals or persons. If a muzzle is used, it must cover the mouth.

*"Second*—That no person shall take or assist another to take a dog outside the limits of the above described district, and that all persons within the above described district shall take such precaution as may be necessary to prevent such dog from going



or being taken outside the limits of the above described district and as may be necessary to prevent the spread of the disease of rabies.

"*Third*—That any dog found in violation of this order and seized and confined under the provisions of the state law shall be cared for in a humane manner and not released to any person except upon a written order from the Commissioner of Agriculture or his duly authorized agent."

The notice also reads, in part, that "the Agricultural Law provides that any person may catch or confine, or cause to be caught or confined, any dog found within the quarantined district during the pendency of this quarantine, in violation thereof; that if a dog which has been seized and confined is not found to be affected with the disease known as rabies, it may be released to the owner upon the payment of \$10.00; that if such penalty is not paid within three days after such dog is seized and impounded, or if it is impracticable, after reasonable effort, to catch and impound such dog, any person may kill or cause such dog to be killed."

While these notices are being printed and posted, the authorities in all the respective communities are advised by the Department of Agriculture to employ all possible measures to ascertain what, if any, animals have been exposed to contact by the rabid dog or animal, having all such animals at once destroyed, and if not destroyed to have them so confined and secluded for a period of at least one year, that should they develop rabies, it would be impossible for them to inoculate other animals or persons. If a person has been bitten by a positively rabid dog sufficiently serious to suspect the possibility of inoculation, and should ask our opinion as to the advisability of taking Pasteur treatment, we would gladly give such opinion, but this is a matter of advice which ordinarily should come from the local health officer or the family physician.

There is a point which we wish to advise positively on, and that is that in many cases where a person is bitten by a dog that to all appearances is normal, the one thought seems to be to have

the dog destroyed, some taking the precaution to have the brain examined, others caring or knowing nothing about a microscopical examination, simply believing that if the dog's life is ended, the possible danger of hydrophobia developing in the one bitten is removed. This, indeed, is a serious mistake, and we do not advise the destruction of the dog for many reasons. It is the custom of the Department, when we receive word that anyone has been bitten by a dog, to immediately procure the dog and confine it in a thoroughly safe kennel for observation. It is observed daily for at least twelve days, and if, at the end of that period no symptoms of rabies are exhibited, the person bitten need have no apprehension of the bite causing the disease, since, from the most recent experiments by many (notably Nicolas), the saliva has never been found to be virulent more than eight days prior to the development of symptoms in the dog. Therefore by holding the dog under observation for twelve days, we are taking safe precautionary measures. No known case is on record where a human being has developed rabies after such precautions have been taken. If, at any time during the period that the dog is under observation, it shows even symptoms of a positively suspicious character, it is at once destroyed and the brain promptly sent for an examination. Another advantage is that had the dog been immediately despatched, and its brain sent for a microscopical examination, and the examination proved negative, animal inoculation would then be necessary for further verification, which would mean at least two weeks suspense to the one having been bitten, before an accurate diagnosis can be made. Another very important point to be remembered is that those doing laboratory work tell us that to get the most positive results with the rapid methods of diagnosis, it is essential that the animal be allowed to die naturally with the disease or be destroyed only after the symptoms have appeared. While it is true that the Negri bodies are present much earlier in the disease than the changes in the ganglia, still the failure to find Negri bodies in a dog's brain that had not yet showed symptoms of rabies might be misleading, as

well as the finding of such bodies in the brain of an animal which, at the time of death, seemed in perfect health. But even if, upon the examination of a brain prior to the appearance of the symptoms, the case is pronounced positive, the dog, at the time of death, showing absolutely no symptoms, it does not seem to me that, with our present knowledge of the disease, we are justified in putting a poor parent to the expense or subjecting a frightened child to the ordeal of the Pasteur treatment. Had the dog been held for proper observation, the necessity or the non-necessity of this could have been determined positively.

PREPARING A BRAIN FOR EXAMINATION.—The next very important question is the proper preparation of the brain for examination. It is very essential that the brain reach the laboratory in a condition fit for a rapid diagnosis, because, if it is not it will be necessary to resort to animal inoculation, and there are cases on record where the disease has developed simultaneously in inoculated experimental animals and the individuals bitten.\* Always remember that if a brain is badly mutilated either by shooting the animal in the head, as is sometimes done, or by a careless removal of the brain, it causes a delay at the laboratory to get the brain in proper condition to examine, if it can be examined at all. This, of course, is equally true of a brain that is badly decomposed. In cold weather probably the safest way is to cut off the head and forward it in toto to the laboratory; but during hot weather such a procedure cannot be considered safe, even though it is packed in ice. Perhaps the most satisfactory method is to remove the brain carefully and put it in a jar containing pure commercial glycerin, having enough of glycerin to immerse the brain wholly, then packing this jar or container carefully in a box and marking plainly and sending by express to the New York State Veterinary College at Ithaca. Examinations are made there without charge to the sender, which is indeed an advantage which I fear is not appreciated by all of us as much as it should be.

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\* Moore.

STATISTICS COMPILED TO APRIL 1, 1910.—At the present time rabies exists in sixteen counties, and this department has rabies quarantines in two villages, seven cities and fifty-one townships. There have been, during the entire year, 103 towns, fifteen cities and eight villages under quarantine, located in twenty-nine different counties.

STATISTICS FOR THE YEAR 1909.

	Towns.	Cities.	Villages.
Quarantines laid and raised in the year 1909 to date.....	42	5	2
Quarantines laid in the year 1909 and still in force.....	61	10	6
Total .....	103	15	8

(The above places were located in twenty-nine different counties of the state.)

During the years 1908, 1909 and 1910 to date our records show that 105 persons have been bitten by rabid animals, of which twelve have died; ten horses bitten, of which five have died; sixty-eight cattle bitten, of which fifty-four have died; fifty-four sheep bitten, of which thirty-eight have died; eleven swine bitten, of which ten have died. This list, as you will see, does not include the hundreds of dogs that have died of rabies or have been killed because of showing symptoms of the disease, as well as the number that have been exposed, and might have developed the disease, had they not been destroyed as a matter of precaution. The statistics relative to deaths from rabies in human beings were obtained from the New York City Department of Health.

Statistics from the New York State Veterinary College show that during the year 1908 the total number of examinations made for the diagnosis of rabies was 315, of which 188 were positive, 94 negative and 33 undetermined. Similar data for the

year 1909 shows 583 examinations, 283 of which were positive, 260 negative and 40 undetermined.

**PASTEUR TREATMENT.**—While the functions of the Department of Agriculture are to control infectious or contagious diseases of domestic animals, still we are constantly receiving inquiries as to the merits of the Pasteur treatment and where and how it can be procured. As to its efficiency, suffice it to say that the Pasteur treatment has reduced the mortality of those bitten by rabid animals from 16 to 20 per cent. to a fraction of 1 per cent.

As has been mentioned, in those cases where the bites are about the arms or face the period of incubation is much shorter and the mortality is much higher, having been estimated by different writers anywhere from 50 to 80 per cent., since the treatment requires from two to three weeks, and it is considered that at least two weeks are necessary after treatment is completed for the height of immunity to be established. Therefore, all deaths that occur during the course of treatment or within two weeks after should not condemn the treatment, but should be considered as cases in which the treatment is not applicable, the period of incubation being too short for the virus to have the desired effect before the symptoms appear.

This class of cases has caused faithful investigators to try to improve upon our present methods. Experiments with what is termed a simultaneous method, which consists of injecting the serum from an immune animal and a strong virus at the same time, is reported as giving good results in a few cases after the symptoms have appeared. This, however, is purely in the experimental stage and should not be commented on in any way positively until more is known about it. The present method is a daily sub-cutaneous injection of a virus, which is a graduated dose of an emulsion of spinal cord of a rabbit which has been inoculated with rabid virus and allowed to develop the disease, the spinal cord then having been treated by a process to control its virulency, beginning with a very mild virus and injecting with a stronger one each day until say from 14 to 21 injections have



been introduced, depending upon the estimated seriousness of the infection. There are institutes which are prepared at all times to administer this treatment, and it is also well to know that the treatment can be furnished from the Health Department of New York City by being sent daily to the local health officer or the family physician, thereby making it possible for the patient to be treated at home. The law still further provides that for those needing treatment, and who are too poor to pay for it, the county shall take charge and pay for such treatment.

Bauer\* has given us his observation on 447 fatal cases of human rabies, and I herewith append them as the periods of incubation are instructive. Of these cases there died after the bite in from

12-25 days.....	33	persons.
26-30 days.....	27	"
31-35 days.....	35	"
36-40 days.....	35	"
41-50 days.....	71	"
51-60 days.....	40	"
Over 60 days.....	206	"
<hr/>		
Total .....	447	"

As will be seen by statistics here furnished, New York state has suffered from a severe epidemic of rabies during the past two or three years, and that if we are to stamp out this disease as they have in other countries, we will all need to co-operate and follow the system that has been adopted by countries which have been successful in handling the disease until a more simple and better method can be determined later, if possible.

DR. G. ED. LEECH is attending the summer short course at the Kansas City Veterinary College, getting a few new ideas along the lines of his special work, "milk and meat inspection."

\* Moore in reprint from *New York State Journal of Medicine*, February, 1909.



## THE PREVENTIVE DOSE OF TETANUS ANTITOXIN FOR THE HORSE: ITS RELATION TO THE AMERICAN UNIT.\*

BY DR. A. PARKER HITCHENS, GLENOLDEN, PENNA.

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In its etiology and pathogenesis tetanus perhaps is better understood than any other infectious disease. The poison or toxin, produced by the tetanus bacillus growing locally, attacks the nervous tissue and causes the painful contractures and other symptoms which characterize the disease. In other words, the symptoms of the disease are dependent directly and solely upon the toxin elaborated by the tetanus bacillus, and to prevent these symptoms it would seem necessary merely to prevent or inhibit the action of the toxin.

In the antitoxin, first prepared by Behring and Kitasato (1890) (1), we have a substance which will unite with tetanus toxin and render it harmless. It was believed at first that to cure the disease it would be sufficient to introduce into the body enough antitoxin to neutralize the toxin present therein. Further experience, however, has demonstrated that antitoxin in the quantities ordinarily given is practically powerless to influence the course of the acute disease because (1) at the time symptoms appear there is present in the body an enormous and rapidly increasing quantity of toxin; and (2) a firm combination exists between the toxin and the nervous tissue which antitoxin cannot disturb.

It is my object in this paper to present proof (1) that in the doses customarily used, tetanus antitoxin is a preventive agent of real value and (2) to ascertain the efficient dose expressed

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\* Read at a meeting of the Keystone Veterinary Medical Association, Philadelphia, Tuesday Evening, May 10, 1910.

in American units. To further this I have collected clinical and experimental evidence from foreign and domestic sources as reported in the literature. Some clinical observations and experimental work of my own tend to confirm the general conclusions.

#### CLINICAL REPORTS.

*German.*—Reck (1901) (2) of the German army, states that although tetanus is very common in the neighborhood of Frankfurt a/M, the preventive use of antitoxin has never failed him.

Hutyra and Marek (2nd ed., 1909) (3) say that the results are always perfect.

Richmann (1909) (4) says that in the stables of one of the large German antitoxin manufacturers, the horses receive every six weeks an immunizing dose of tetanus antitoxin. While tetanus was rather a frequent occurrence before this practice was instituted, there has not been a single case since. According to him the experience of veterinarians in Germany is the same.

*French.*—In France the evidence in favor of tetanus antitoxin as a preventive agent is conclusive. The magnificent work of Nocard was probably responsible for its early widespread prophylactic use in that country. Its popularity is attested by the fact that while in the last four months of 1896 (when its use began), 1,511 doses were used by veterinarians, and in the twelve months of 1897, 14,657; the number had risen in 1901 to 47,096 (Nocard & Leclainche) (5), while in 1906, according to Vailard (6) 87,264 doses were used.

According to Nocard and Leclainche (3d ed., 1903) (7), the prevention of tetanus following traumatism is assured with certainty by serotherapy. Nocard collected observations on 3,088 animals (of which 2,708 were horses) injected preventively after an operation or wound. A first group comprises 2,500 animals inoculated immediately after operation. A second comprises about 600 subjects treated one, two and four days and more after the wound. In this total a single case was seen—a horse treated five days after the wound. The disease was benign, and the animal was well within twelve days. During the

collection of these figures 314 cases of tetanus (220 horses) were noted in animals not treated.

Labat (1902) (8) reports that among 706 animals wounded or operated upon, not a single one which had been treated with tetanus antitoxin contracted tetanus. Among those which were for some reason not treated, three got tetanus. Labat believes it advisable to use a second injection, but because they left the infirmary soon after operation, almost all cases reported received but a single injection. This sufficed.

Nandrin (1903) (9) says, speaking of its prophylactic value, "the efficiency of tetanus antitoxin is not to-day contested by anyone."

Huguier (1909) (10) has recently started a discussion in France as to the *number* of injections necessary to be given to a horse. He says that all text books advise the use of a second injection—the first to be given as soon as possible after the traumatism, the second eight or ten days later. When, at one time, on account of a scarcity of serum he was forced to economize, he gave only one injection. Noting that all animals thus treated were apparently protected, he continued the use of a single dose of 10 c. c. Although he has been stationed in Africa, which is notoriously favorable to the development of tetanus, he has not had a single case. In reporting this experience, Huguier asked if other veterinarians had had similar results.

Affirmative replies were not slow in coming.

Dieudonne (1909) (11) publishes an interesting table showing by years the number of deaths which have occurred in his practice from tetanus after operation. None of these received antitoxin. A single preventive injection is considered sufficient and has always proved adequate.

Chapellier (1909) (12) has for ten years used only one injection. In more than 500 castrations he has not seen the slightest symptom although his region is far from being free from tetanus.

Labat (1909) (13) up to 1902 gave two injections as a matter of principle but, as reported in an earlier paper (*vide supra*)

only about ten per cent. of his cases remained under observation long enough to receive the second dose. Since 1902 he has used only single doses. Fifteen hundred operations and wounds of various kinds have not been followed by a single case of tetanus.

Pecus (1909) (14) uses a second injection when the wound tends to last a long time. He works in a tetanus infested region, but has not had a case of tetanus in 1,500 wounded animals; the injuries of 500 were caused by street nails.

Encouraged by the quick and favorable response to his paper (quoted above), Huguier was led to consult various veterinarians and veterinary medicinal societies in order that he might assemble as much evidence as possible concerning the technique adopted in the current practice of preventive serotherapy against tetanus in the horse. This work was presented to the Société Centrale of Paris, by M. Jacoulet (15) on March 3d of this year. Huguier gives the names of the societies and individual veterinarians he has consulted—names which one meets frequently in French veterinary literature.

Of those consulted by him, a great number reside in countries reputed to be badly infested with tetanus. All declare that a single preventive injection suffices in current equine practice, provided it is administered very soon after the operation or traumatism. Not one of them has ever seen tetanus appear after such a procedure and their observations reach to thousands of cases.

In his search through the literature, Huguier has found recorded but nine failures. These are reported in the *Recueil D'Hygiene et de Medecine Veterinaire Militaires*, from 1900 to 1908. The nine cases reported are divided into seven groups of observations; six of these must be eliminated from consideration because there is no mention made as to the length of time between the accident and the injection.

Although I have looked up all the other references given by Huguier and have noted the more important above, I have been unable to find in this country the journals in which these failures are reported.

In commenting on these three failures, Huguier remarks what an insignificant figure this is in comparison with the 3,088 successes of Nocard (1895 to 1897), the 13,829 successes reported by Labat, and by Vaillard with the co-operation of Vallee, and finally in comparison with the 10,000 successes communicated to Huguier by civil and military veterinarians, without counting the thousands not published.

*American.*—In America, Pearson (1897) (16) says that tetanus can be prevented with great certainty by the use of antitoxin, and adds: "My attention was recently called by Dr. Walters, of Wilkesbarre, to a mine in Dauphin County wherein there were almost one hundred mules, and of these twenty-three died of tetanus during a period of two years. In January five or six dies. I obtained some tetanus antitoxin, which was administered to fifty mules that occupied the stables in which tetanus had previously appeared. Since that time no case of tetanus has been reported."

MacFarland and Ranck (17) report the systematic immunization of the horses in a stable used for the preparation of antitoxins. In 1897 when no special precautions against tetanus were taken, the death rate was 8 per cent. In 1898 tetanus antitoxin was used, but not systematically, and on account of its low value the doses were extremely small. The death rate during this year was 10 per cent. In 1899 all horses were immunized systematically and the death rate was reduced to one per cent.

The records of this laboratory show that the antitoxin used even in 1899 was of very poor quality. The exact strength cannot be ascertained, but it was the practice to use antitoxin too weak to place upon the market.

A hitherto unreported experience in the stables of this firm is particularly interesting. Tetanus had been eliminated from the stables by the prophylactic use of tetanus antitoxin, notwithstanding the fact that the serum used was very weak in strength. In the winter of 1906 it was suggested that probably the injection into the diphtheria horses of serum from other horses might in some way interfere with the ability of the former to produce



diphtheria antitoxin of high value. In order that this point might be decided, the quantity of tetanus antitoxin used for immunization was greatly reduced until only 5 c. c. was injected every two months. As a result of this two horses died of tetanus in rapid succession. Larger doses of antitoxin were administered to all the other horses immediately, and monthly injections have been continued ever since. It seems needless to state that no case of tetanus has occurred since that date.

Besides the reported experiences in America which are very meagre, I have communicated verbally with a number of veterinarians in this vicinity, and have yet to hear of a failure of tetanus antitoxin to immunize the horse, when the antitoxin has been injected soon after the traumatism.

Furthermore, I have been told officially by one of the manufacturers of tetanus antitoxin in this country that during twelve years there has not been received a single letter from any veterinarian complaining that a dose of tetanus antitoxin used by him failed to immunize the animal.

**SUMMARY OF CLINICAL EXPERIENCE.**—The results of clinical experience in the preventive use of tetanus antitoxin in Germany, France and America prove its efficiency in equine practice beyond question.

**EXPERIMENTAL EVIDENCE.**—Nocard (1897) (18) reports a series of experiments which show the great preventive value of tetanus antitoxin.

On March 9th at 10 A. M. he injected 14 horses with dry tetanus toxin. Each animal received six milligrams under the skin of the neck.

The controls became tetanic—one on 14th, the other two on the 15th. Seven others treated either at the moment of the appearance of the first symptoms, or only 24 or 48 hours before, contracted a fatal tetanus. The last four resisted. Of these four

One received 10 c. c. Pasteur Institute serum one hour after the injection of the toxin—never the slightest symptom.

One received 20 c. c. Pasteur Institute serum 24 hours after the injection of the toxin. No symptom.



One received 30 c. c. Pasteur Institute serum 48 hours after the injection of toxin. Slight symptoms.

One received 40 c. c. three days after. On the morning of March 14th this horse was certainly tetanic. The same day at 10 o'clock he was injected with 75 c. c. serum into the jugular vein. He finally recovered.

If the extreme severity of this experiment is taken in consideration, viz., the dose of toxin, always fatal to witness, having been injected all at once and immediately absorbed, one can affirm that in daily practice there will be a great many chances to arrest the evolution of tetanus or to prevent its appearance, by interfering even several days after the traumatism. But one must well know that the more the interference is delayed, the greater the dose of serum to inject must be.

My own experiments which are reported below offer further evidence of the preventive value of tetanus antitoxin.

DOSAGE.—With this enormous amount of evidence at hand, it would seem that if we can determine the doses customarily used in these experiences we shall have evidence from which we may construct definite figures as to the efficient preventive dose of tetanus antitoxin for the horse.

The question of dosage has really been under discussion since tetanus antitoxin was discovered. It was early demonstrated that antitoxin depends for its specific value solely upon its ability to neutralize toxin—the fact of neutralization being determined by the harmlessness of a mixture of toxin and antitoxin when injected into one of the small laboratory animals—either a mouse, guinea pig or rabbit.

Tetanus toxin is one of the strongest poisons known. A small fraction of a milligram is sufficient to kill a white mouse. In like manner a minute quantity of antitoxin is sufficient to neutralize a fatal dose of toxin for a mouse. On account of the infinitesimal quantities necessary on both sides, the strength of antitoxin was early stated in terms of the number of grams of mouse or guinea pig weight protected by one c. c. of the serum. These figures reaching into the millions are still used in certain

foreign laboratories, as they were formerly used in some of the laboratories in America. Such figures have always been very cumbersome and various local efforts were made to reduce the nomenclature to more convenient terms. Partly for this reason the statement of strength used by practically every laboratory was unique until the establishment by the United States government of a standard method for the United States. This standard is officially defined as follows:

"The immunity unit for measuring the strength of tetanus antitoxin shall be ten times the least quantity of antitetanic serum necessary to save the life of a 350 gram guinea pig for 96 hours against the official test dose of the standard toxin furnished by the Hygienic Laboratory of the Public Health and Marine Hospital Service.

The official test dose of toxin was made 100 times the smallest quantity of toxin which would kill a guinea pig within 96 hours.

A new unit to be the standard for the whole country was thus established, but its interpretation in terms of dosage was impossible on account of the absence of clinical and experimental evidence in human practice. Realizing, however, that physicians would require some statement as to the number of units they should use in practice, an arbitrary dose of 1,500 units was made the official immunizing dose.

The efficiency of this dose in human practice I shall not now attempt to discuss. It seemed to me at the time that while 1,500 units might be required to immunize a man, experience had shown that a smaller dose was sufficient for the horse and the investigation which is now in progress tends to confirm this idea.

An explanation might naturally be required as to why man should receive a larger dose of antitoxin for immunization than the horse. This explanation is easily made.

The vehicle of the tetanus antitoxic power is horse serum. Injected into man it is a foreign proteid and is eliminated very rapidly. Dehne and Hamburger (1907) (19) found that when tetanus antitoxin was injected into man, the quantity in the

blood rose gradually until the second or third day when it remained constant to fall brusquely about the seventh or eighth day. This question is interestingly discussed by Römer and Sames (1909) (20). According to them, all the investigators mentioned agree that homologous serum is eliminated much more slowly than heterologous. In passive immunity against tetanus, especially in suppurating wounds, the length of time the antitoxin remains in the blood is (within limits, of course) more important than the amount which is present there during the week following the injection of the antitoxic serum. Antitoxic horse serum is homologous to the horse and therefore compared to man a relatively smaller quantity is sufficient to confer a longer period of passive immunity. Experiment number one (reported below) shows that after a period of 29 days the horse which received only 250 units was still immune, while the horse which had received 50 units possessed considerable resistance.

This investigation was taken up along two lines. First, an attempt was made to find out as far as possible the size of the doses used and recommended in foreign countries and to get some idea of the number of units formerly used in America; and second, to ascertain as nearly as possible by direct experiment the number of units actually necessary to protect the horse from infection.

**DOSES USED ABROAD.**—I have not yet received sample packages of the antitoxins used in Germany, Austria, England, Denmark or Italy by veterinarians and consequently I have been unable to make an estimate of the doses used in those countries. Rosenau and Anderson (21) found in a German serum which they examined 330 units per c. c. The dose recommended in Germany for immunizing purposes is 4 c. c. of a serum whose value is less than 5 A. E. (antitoxic units—Behring system).

We have imported directly from the French market packages of antitoxin on sale for veterinary use. We obtained the product of the Pasteur Institute of Paris, and the product of the Institut Bacteriologique de Lyon.

There was no date or number upon the bottles from the Pasteur Institute. Each bottle was stated to contain 10 c. c. for veterinary use. Upon examination this serum was found to contain about 50 American units per c. c.—in other words, the contents represented 500 units.

The bottles from the Lyons Institute were marked to contain 10 c. c. and were dated January 20, 1910. Upon examination it was found that the serum contained about 30 units per c. c.—in other words, a 10 c. c. dose represented about 300 American units.

Serums from these two institutes were examined by Rosenau and Anderson (21) in 1908. At that time two samples of serum from the Pasteur Institute were found to contain 40 units per c. c. and one other sample contained 66 units per c. c.; in other words, the 10 c.c. doses represented in two instances 400 units, and in the other about 660 units. One sample of antitetanic serum from the Lyons Institute was found by them to contain less than 50 units (it was not tested lower) in other words the 10 c. c. does represent less than 500 units.

The fact that the examination made by ourselves in 1910 agrees so closely with that made by Rosenau and Anderson in 1908 would seem sufficient evidence that the dose of anti-toxin used by practically all veterinarians in France varies from 300 units to about 650 units, the great majority being in the neighborhood of 500 units. This is the dose which in France in many thousands of cases has been followed by practically no failures.

The laboratory records show that one of the American firms recommended and distributed during more than a decade a dose of tetanus antitoxin for immunizing purposes certainly not greater than 500 units. As stated above, this firm has not heard of a single failure due to its product.

#### EXPERIMENTAL EVIDENCE.

As part of the experimental evidence we may mention the experiments of Nocard, which are quoted above.

The Pasteur Institute dose of 10 c. c., usually about 500 units, protected a horse against a certainly fatal dose of toxin given

In planning the experiments which I wish to report now, it was our purpose to repeat as nearly as possible the conditions of a natural infection. With this in view, silk cords two inches long, knotted at one end, were soaked in a suspension of tetanus spores, being heated at  $80^{\circ}$  C. for one-half hour to destroy the toxin. The cords were then dried.

*Experiment No. 1.*—December 9, 1909—Six horses received directly into the muscle silk cord on which tetanus spores had been dried. Antitoxin injected subcutaneously eight hours later.

January 7, 1910.—No symptoms of tetanus had developed in any horse. Each received ten c. c. of a suspension of tetanus spores (heated to  $80^{\circ}$  C. for 30 min.) to which had been added live virulent staphylococci. The injection was made into the cubital muscles of the left anterior limb. Antitoxin was not repeated, the injections had been given 29 days before.

#### RESULT.

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No. of Horse.	Antitoxin.
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1316	1000 units—No symptoms; still in stable, May 10, 1910.
1318	500 units—No symptoms; still in stable, May 10, 1910.
1323	250 units—No symptoms; still in stable, May 10, 1910.
1322	100 units—January 23, 1910, symptoms of tetanus noticed. Died January 31, 1910, 24 days after infection.
1315	50 units—January 23, 1910, symptoms of tetanus noticed. Died January 28, 1910, 21 days after infection.
1320	Control—Died January 13, 1910, 6 days after infection.

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*Experiment No. 2.*—On February 18, 1910, five horses were injected with material similar to that used to infect horses in the experiment number one. That is, they received 10 c. c. of a suspension of tetanus spores which had been heated to  $80^{\circ}$  C. for



30 minutes. To this suspension was added, after cooling, a large loop-full of a 24-hour agar culture of *staphylococcus aureus*. On account of the very acute death of the control horse in experiment number one, the suspension of spores was much more dilute.

Eight hours later two of the horses received 100 units of antitoxin and two of the horses received 50 units of antitoxin. The remaining horse was kept as a control.

None of these horses developed tetanus.

*Experiment No. 3.*—The above experiment was repeated with five new horses. The injections were made on May 1, 1910, the antitoxin being given eight hours after the infection.

Only ten days have elapsed since this experiment was started, and it is, of course, too soon to make a prediction. The control horse, however, developed definite symptoms of tetanus on the eighth day and died on the tenth. None of the other horses show to the slightest symptoms of tetanus.

*Conclusions.*—The evidence which has been collected in this paper appears to justify the following conclusions:

1. That tetanus antitoxin as a preventive of tetanus in the horse is as nearly perfect as anything in biology can be.
2. That a very small quantity of tetanus antitoxin is sufficient to protect a horse against an ordinary infection.
3. That clinical experience proves a dose of 500 units to be amply sufficient for practically all cases.

NOTE.—The above was the status of Experiment No. 3 at the time this paper was read. On the thirty-second day after infection one of the horses which had received fifty units of antitoxin exhibited symptoms of tetanus and on the account of the severity of the symptoms was destroyed.

On the twenty-third day after infection one of the horses which had received one hundred units of antitoxin showed symptoms and died of tetanus on the 27th day.

Of the other two, the fifty unit horse showed only slight local symptoms, but the hundred unit horse exhibited none.

The death of these two horses occurring twenty-one and eighteen days later than the control rather increases the value of this



experiment. They show that the horses were susceptible, but were protected for a period by even the very small doses administered against a dose of tetanus bacilli certainly much greater than a horse would ever receive accidentally.

The great expense of such work with horses precludes the possibility of our going farther with it. While it is believed that the clinical reports presented above (and which are still being collected) have proved the main point, it is hoped that some means may be found to continue the experimental work with horses and other animals.

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## BIOLOGICAL THERAPEUTICS IN VETERINARY PRACTICE.\*

BY DR. T. F. KREY, DETROIT, MICH.

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By "Biologic Therapeutics" is meant the use of biologic products as remedial agents, chiefly the products of bacterial life, and the reactionary products developed in the blood of animals injected with bacteria or their toxins.

When we consider the remarkable advancement that has been made during the past decade in this branch of medicine, we may confidently predict that the future will record still greater and more rapid progress. Truly at no time has this branch of the healing art been regarded more expectantly. Never has its future seemed more promising.

To us, the knowledge that much of this progress is directly due to the achievements of many eminent confrères is indeed gratifying. To them who toil unceasingly converting theories into facts, we owe a debt of gratitude. It is none the less gratifying to note the enthusiasm with which our profession has kept pace with these advanced teachings for the amelioration of disease.

Not many years ago serum therapy in the treatment of disease was considered skeptically. Even the most progressive veterinarians looked upon its use as an expensive experiment only to be considered as a last resort, and then, only in extreme cases where the life of a valuable animal was threatened. To-day we find a vast majority of veterinarians fully alive to the importance of serum therapy and ever ready on all occasions to administer serums, antitoxins or vaccines, whenever their use is indicated.

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Let us view for a moment the results of this activity on the part of the progressive veterinary investigator. We believe his eagerness to grasp and execute his knowledge of advanced methods of treating disease has accomplished more to widen the breach between scientific treatment and charlatanism (which happily through his efforts is rapidly becoming a thing of the past) than any other single effort. The application of his knowledge is perhaps the best indication of his capacity to use it, and thus he not only becomes a power in his immediate community, gaining and holding the respect and support of his clientele, but by his knowledge helps incalculably in the erection of the great edifice of scientific medicine and the elevation of his chosen profession. It would require far too much of your time to explain in detail modern methods of preparing the many biological products now in use. Suffice it to say every care is observed in selecting suitable biological subjects free from disease. Each individual animal is isolated for a specified time and kept under close observation, during which time it is tested for glanders, tuberculosis, etc., as the case might be, and before it is finally accepted for use, it must successfully pass the most rigid tests known to science.

To illustrate the method of preparing antitoxins, let us briefly consider tetanus antitoxin. The horses are injected with tetanus toxin. To produce this, a pure culture of the tetanus germ is grown in beef bouillon, which is then filtered to remove all the germs. The filtrate, containing the toxin, is very poisonous; hence it is necessary to begin the injections with small quantities, gradually increasing the dose as the horse becomes immune or capable of withstanding larger amounts. This ability to withstand otherwise fatal doses of toxin is due to the formation of a specific antidote in the body of the horse.

This antidote is the antitoxin and is specific in that it will neutralize the killing power of tetanus toxin, but will not neutralize other toxins or poisons. By repeated injections of toxin the amount of antitoxin in the horse can be increased enormously, so that one part of the blood serum will neutralize 100 to 200 parts of toxin. When this stage has been reached a portion of

the horse's blood is taken (by introducing a cannula into the jugular vein) and allowed to separate spontaneously into serum and coagulum. The serum thus obtained after having a small amount of preservative added to it, is tested and bottled. It goes without saying that in the preparation of the toxin and its injection into the horses, as well as in obtaining the blood serum, the most rigid bacteriological technique is maintained. The variation in strength of the antitoxic serum from different horses; the absolute purity of the finished product are all important and delicate questions demanding for their determination a high degree of skill and scientific accuracy of observation. These qualifications, in our judgment, outrank all other considerations in the work of producing a reliable antitetanic serum. A perfectly healthy horse has perfectly pure blood. The purity of the blood, however, and of the serum it includes should never be simply inferred; the horses should be kept under special observation for several weeks after the blood is withdrawn, that the last lingering possibility of question as to their perfect freedom from disease of every kind may be dispelled; specimens of the separated serum are planted upon culture media where germs would grow if any were present.

Again, large quantities of the serum are injected into guinea-pigs, that bacteria or toxins of any kind, if present, may declare themselves, as they undoubtedly would in these very susceptible little animals. Negative evidence here is positive evidence of the purity of the serum.

It would be difficult to select an antitoxin that has received more universal attention during the past year or two than Tetanus Antitoxin. Vast amounts of indisputable evidence submitted by practitioners in both human and veterinary medicine seem to justify its use not only as a prophylactic, but in increasing doses for curative effects.

In 1895 Nocard demonstrated to the satisfaction of the French veterinarians the great value of prophylactic therapeutics. Wishing to impress the value of prophylaxis, Nocard distributed

among the French veterinarians 1,800 10 c. c. flasks of antitetanic serum.

Reports received indicated that 375 animals (victims of wounds which might easily have proved tetanigenous) had been injected and not one developed tetanic symptoms; at the same time these veterinarians had observed 55 cases of tetanus among animals not treated with serum, but otherwise exposed to the disease essentially the same way as the 375 which escaped.

McFarland and Ruck, in this country, have observed similar results in a series of 800 horses exposed to infection. Comparison between those which received prophylactic treatment and those which did not show that tetanus developed in one per cent. of the former and ten per cent. of the latter. Could stronger proof of the protective value of antitetanic serum be desired?

A distinguished authority has said: "The initial symptoms of tetanus do not herald the beginning of the disease, but really the beginning of death from the disease." Essentially prophylactic treatment is of paramount importance, but unfortunately frequently veterinary advice is not sought until the characteristic symptoms are manifest, then to produce gratifying results the serum must be given in adequate doses with a view of effecting a cure by neutralizing the uncombined toxins. Unfortunately, not infrequently, our clients are reluctant to proceed with a treatment involving at the same time considerable expense and doubt of ultimate recovery; yet, as one of our collaborators aptly put it, "It is perhaps advisable to remain firm rather than to undertake the treatment of an impossible case with inadequate serum with nothing in view but inevitable failure, for we cannot hope to neutralize rapidly increasing toxins with an inadequate amount of antitoxin, and it is a question if our reputation as a scientific veterinarian does not suffer infinitely more through the loss of a hopeless case than by maintaining a principle we are perfectly justified in establishing."

Proper appreciation and timely use of the prophylactic dose of serum in the treatment of suspicious traumatism will, in a



great measure, eliminate this opposition. Further than this, we believe under these circumstances, prophylactic treatment is not only justifiable but demanded as a duty by the present conditions of prophylactic therapeutics. I believe there is no evidence that the serum has any effect on the bacillus; it only neutralizes the toxins, but it is equally important to note that the bacillus of tetanus does not belong to the class of septicemic organisms which invade the whole body and which produce their effects by growth and increase, but fortunately on the contrary, the bacillus of tetanus remains localized at the original point of infection, within reach, and where their growth may be greatly, if not completely, controlled by energetic treatment with efficient antiseptics and disinfectants. In its growth, however, the tetanus bacillus produces a powerful toxin which is taken up by the peripheral nerve endings and carried along the axis cylinders of the motor nerves, eventually reaching the spinal cord. With injections of serum we hope to neutralize these toxins before they combine with the vital cells of the organism destroying their functional activity. Whether or not this can be accomplished by administering in adequate doses is exceedingly difficult to verify, even in severe cases that successfully respond to treatment there remains an element of doubt as to whether or not the patient would have recovered had no serum been administered, yet it is reasonably certain that the mortality is very much higher when cases are treated without antitoxin.

Standardization of tetanus antitoxin is of paramount importance. With much pleasure and satisfaction we reviewed the recently issued Bulletin No. 424 by the United States Department of Agriculture, entitled: "The Need of Controlling and Standardizing the Manufacture of Veterinary Tetanus Antitoxin." Quoting from the Bulletin verbatim:

"The method of standardization was unanimously adopted by the Society of American Bacteriologists subsequent to the following report made by a special committee:

"That tetanus antitoxin be standardized by the tetanus toxin furnished by the Public Health and Marine Hospital Service. The

unit is ten times the least amount of serum necessary to save the life of a 350-gram guinea-pig for 96 hours against the official test dose of the standard toxin. The test dose is 100 minimal lethal doses of a precipitated toxin preserved under special conditions at the hygienic laboratory of the Public Health and Marine Hospital Service.

"It was decided that the minimal immunizing dose of a case of possible infection through a wound should be 1,500 of such units. It was decided that after April 1st the new unit should be adopted by all producers of tetanus antitoxin.

"In this method the immunity unit for measuring the strength of tetanus antitoxin is fixed so that it shall be ten times the least quantity of antitoxin serum necessary to save the life of a 350-gram guinea-pig for 96 hours against the official test dose of a standard toxin."

It is needless to add that the methods adopted should receive the heartiest approval and support of both the producer and user. Standardization as recommended means a serum prepared on a sound rational scientific basis with more definite, uniform potency and results, and will have a tendency to a more intelligent use of the product.

Antistreptococcic serum is rapidly growing in favor, and is being used by veterinarians in the treatment of many diseases of bacterial origin. When the horse is injected with gradually increasing amounts of killed cultures of the germ (*Streptococcus Pyogenes*) a peculiar principle develops in the blood that is useful for prophylactic and curative purposes. These cultures are obtained from the exudate of a number of diseases in human beings and certain pathologic conditions common to animals. In other words, mixed infection.

As in the case of antitetanic serum some months elapse before the horse is ready for bleeding. Then from four to six quarts of blood are withdrawn from the jugular vein under strict aseptic and antiseptic precautions. The blood clots within a few minutes when it is placed in a refrigerator and kept there for a few days. At the end of this time it is found that a large portion

of the serum has become separated from the clot. This serum contains the antitoxemic principle. Next it is withdrawn from the blood-tubes by means of sterilized siphons into sterilized bottles, and a very small quantity of trikresol added to preserve it, after which it is allowed to stand for several days before the next step is taken. Then a bacteriological examination is made to prove the sterility of the product, which is afterwards carefully filtered and again examined. If it be found free from germs, the clear filtrate is put in syringe-container bulbs, the operation being done in an isolated bottling room. After a lot of serum has been so disposed of, a number of the bulbs are taken at random and for the third time examined bacteriologically. Although antistreptococcic serum was originally recommended in the treatment of septic infection, research work of prominent veterinary investigators is constantly enlarging an already comprehensive list of diseases indicating the use of the serum.

Dr. John Spencer, Virginia Agricultural Experiment Station, reports gratifying results with its use in the treatment of pyemic arthritis in the December, 1908, edition of the AMERICAN VETERINARY REVIEW. In the January, 1909, edition of the REVIEW Dr. G. H. Acres, Sudbury, Ont., reports good results with antistreptococcic serum in treating infectious anemia. J. R. Craif, M.R.C.V.S., has used it successfully in treating strangles. Similarly, Dr. C. H. Jewell, U. S. Army, Fort Riley, in a paper read before the American Veterinary Medical Association at Philadelphia, referred to its use in shipping fever, using it on a number of cases, and in comparison, influenza antitoxin on a number of other cases. He concluded that where antistreptococcic serum is a valuable immunizing agent, his experience with both serums showed that influenza antitoxin (P. D. & Co.) produced a longer immunity than antistreptococcic serum.

Briefly, we feel confident that time and experiment will disclose many diseases of bacterial origin that will promptly yield to treatment with antistreptococcic serum, and this offers to the

veterinarian who desires to promote the welfare of his profession a wide field for original investigation. Along these lines it is worthy of note that a number of veterinary investigators are at present engaged in proving the value of canine distemper antitoxin. Canine distemper, as we so fully realize, has successfully defied all attempts to halt its ravages, even though the greater resources of the pharmacopœia in all probability have been exhausted time and again in search of relief. Perhaps this is due in no small measure to an almost total absence of any knowledge regarding the specific organism which causes it, which has always been considered ultra visible. Experimentally some very encouraging results have been obtained in the treatment of the disease with antidiphtheric serum.

A number of veterinary investigators with whom we are in close touch have been trying this serum in clinical experiment for more than a year with a very satisfactory reduction in mortality. Besides this, a member of our scientific staff has devoted his entire time for the past two years to the study of canine distemper with encouraging results. However, experiments of this nature require time to consider every detail in relation to the test, but we believe the not distant future will mark the advent of a serum or vaccine for the successful treatment of this disease.

Another interesting discovery of which we have heard and read much during the past year is "Ophthalmo-Reaction Test for Tuberculosis in Cattle." The ophthalmo test consists, as you are aware, of instilling in the eye at the external canthus a small amount of tuberculin usually  $\frac{1}{2}$  c. c. The eye is immediately closed and lightly rubbed to distribute the tuberculin as much as possible, and so that it will not be washed away by the tears.

Owing to the glycerine the tuberculin is absorbed very easily into the tissues. Speaking of this test, Dr. J. Lignieres states in *Recueil de Medicine Veterinaire*, 30 November, 1907:

"Up to date I have used the ophthalmo-reaction upon 200 cases of tuberculous cattle. All of the animals which reacted to the well-known subcutaneous test also gave a positive ophthalmic

reaction, and healthy animals gave no ophthalmic reaction. I used undiluted tuberculin of higher concentration than usual. Under these circumstances the animals always gave a very clear ophthalmo-reaction, at times visible within three hours characterized by increased flow of tears, a hyperæmic of the conjunctiva, and especially by formation of clots of white pus almost entirely formed of polymorphonuclear leucocytes. These clots are easily seen upon the conjunctiva; they accumulate at the internal canthus here they soon escape: Symptoms other than the presence of pus, are not sufficient. The pus must be present to make the test valid. It never fails with tubercular subjects, if the test is conducted as above."

The ophthalmo-reaction continues for about twelve hours, at times more. With certain animals the reaction is not visible until after fifteen hours.

Messrs. Campbell and White, as reported in the *Journal of Experimental Medicine*, March, 1908, conducted experiments with seventy-one head of cattle, twenty-five of which were shown to be tuberculous, and forty-six non-tuberculous, as tested by the usual subcutaneous method. They concluded from their researches that the ophthalmo-tuberculin test is of limited value in the diagnosis of tuberculosis in cattle, but state further on that "we therefore hold that if 1 c. c. tuberculin is carefully instilled into the junctival sac, and if careful comparison of the instilled eye with the opposite eye shows that a reaction of varying intensity results in ten or twelve hours after the first instillation, a tubercular lesion is present." Furthermore, we are inclined to believe that the ophthalmic tuberculin test will reveal tuberculosis at as early a state as the usual subcutaneous test, and that the cutaneous test does not seem to be as accurate as the ophthalmic test. Along with this, we find the Health Board of Chicago demanding "that all milk cows producing milk for consumption in the city of Chicago shall be tested both by the subcutaneous and ophthalmo-reaction tests."

Let us hope that the research work of investigators will prove this method of testing cattle of sufficient diagnostic value to use



the test in the near future to the exclusion of all others. By its use the taking of the temperature several times prior and subsequent to injection of the tuberculin subcutaneously as now practiced, will be eliminated, and thus much time and annoyance will be saved the busy practitioner. The experiments we are conducting at the present time shall be continued, and any definite results will be reported in due season.

The conception and development of the Opsonic Theory has powerfully revived the interests of the scientific world. It is quite possible that bacterial vaccines will play an important part in the treatment of veterinary patients. However, it is yet too early to touch on this important subject with any knowledge of definite results in veterinary practice.

We have been in close touch with Sir A. E. Wright, one of the originators of the Opsonic Theory, a member of our biological staff having spent several months in Dr. Wright's laboratory studying at first hand the subject of vaccine-production. In human practice we have made systematic efforts to determine the utility of these products, and the mass of information which we have collected demonstrates that, in properly selected cases and in competent hands, bacterial vaccines yield good and sometimes brilliant results. In conclusion let us hope that this important research work will continue, and may we in veterinary practice be ever observant, uniting our efforts to promote every course which tends to advance the progress of our chosen profession, so that each year as we convene we may point with pride to veterinary therapeutics as a more exact science.

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THE A. S. P. C. A., Philadelphia, has an automobile horse ambulance. Verily the horses of the Quaker City are at the mercy of the automobile.

DR. ANGUS MACINTOSH, of Perth, West Australia, an enthusiastic surgeon, and a delegation from New York, had a very interesting visit with Dr. Runge on July 15th, when they journeyed to Newark to attend the clinic of the Veterinary Medical Association of New Jersey.



## AN EDUCATIONAL PROBLEM.\*

BY J. P. FOSTER, B.Sc., V.S., M.D.V., HURON, S. DAK.

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It is with considerable trepidation that I venture upon what is perhaps dangerous ground; but it is said that "fools rush in where angels fear to tread." Some of the things that I have attempted to bring out in this paper are certainly very unpleasant; and should anything be said to embarrass or injure the feelings of any member, I shall be exceedingly sorry.

In drawing certain parallels, it has been necessary to border on the personal, although no names have been mentioned. In my effort to be impersonal, I suppose I have succeeded about as well as did a certain character of whom I once read. He had been playing poker during the forenoon with four or five other men, one of whom had lost an eye in a shooting affray. This one-eyed individual had been cheating. When the game was resumed in the afternoon, the man first mentioned seated himself at the table, drew a large 45-caliber revolver from his belt, and laid it across his knees. Fixing his gaze upon the man minus one optic, he said: "Gentlemen, I don't wish to be personal, or mention any names; but if there is any more cheating here to-day, a fellow I know of is going to have his *other* eye put out."

I assure you that my intentions are of the best, and I hope that you will receive this paper in the spirit in which it is written. Should you become vexed, however, kindly remember the story told concerning the notice that was posted above a church organ in a town in the western cattle country. This notice was for the

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\* Presented at the annual meeting of the Minnesota State Veterinarian Medical Association at St. Paul, January 12, 1910.

benefit of possible obstreperous members of the congregation, and was as follows: "Don't shoot at the organist. He's doing the best he can."

No doubt a majority of the members present are familiar with the contents of Circular 133, issued July 6, 1908, by the Bureau of Animal Industry of the United States Department of Agriculture. This circular was based upon the report submitted to the Secretary of Agriculture by the committee appointed by him for the "purpose of obtaining information regarding the course of instruction being given at the various veterinary colleges.

References to this circular were freely made, and certain portions of it copied and industriously circulated in the bulletins and annual announcements published by several of the schools designated as being included in the list of what were termed "Class A" veterinary colleges. One of these so designated Class A colleges devoted three pages of its combined prospectus and bulletin 1908-9 to a reproduction of extracts from this circular, not omitting, of course, the list of Class A colleges; and in the introduction of its prospectus, draws particular attention to the fact that it is in "accord" with the provisions of the circular mentioned. It is true, however, that at the time the prospectus was issued, its graduates were not eligible to membership in the American Veterinary Medical Association. This association has since concluded to accept graduates of this school as members, beginning with those of 1908.

Another enterprising institution, also in Class A, sent out in the envelope with its annual announcement, what at first glance very much resembled a bona fide Circular 133; but upon closer inspection and comparison with the original, it proved to be a somewhat shorter but wider pamphlet, which, with the slight difference in the style of type and quality of paper used, might cause one to wonder if it had not been gotten out by a local printer and not at the government printing office.

Regardless of just where it was printed, it probably served the advertising purposes for which it was evidently intended. These seeming inconsistencies, however, may have been due to a

pardonable pride in having been recently placed in the highest classification of colleges, and should undoubtedly be overlooked.

The question that concerns us is: what effect did the report to the Secretary of Agriculture have in raising the standard of veterinary education? I believe that Dr. Tait Butler, in discussing the report of the chairman of the Committee on Intelligence and Education, at the Philadelphia meeting of the American Veterinary Medical Association in 1908, truthfully summed up the situation when he said: "The Secretary of Agriculture has done more in the last six months to elevate the standard of veterinary education, to build up and complete laboratories in our colleges, to extend the courses of study, to secure more proficient faculties, to raise the requirements for entrance and the standard for graduation, than all of the work of the previous ten years has done."

Over a year after Circular 133 was published, or, to be exact, on August 9, 1909, Circular 150 was issued by the Bureau of Animal Industry, and while Circular 133 was headed: "Report and Recommendations Regarding Veterinary Colleges in the United States," Circular 150 is entitled: "Regulations Governing Entrance to the Veterinary Inspector Examination." The regulations prescribed by Circular 150 have been approved by the Secretary of Agriculture and the President of the Civil Service Commission, and became effective on and after September 1, 1909. A comparison of the circulars discloses the fact that the "regulations" of Circular 150 follow the "recommendations" of Circular 133 very closely, and, with few modifications, are the same. The separation of colleges into "A," "B" and "C" classes as recommended in Circular 133, is modified by Regulation XXIV. of Circular 150, by substituting for these classes a "list of accredited veterinary colleges."

Included in this list of accredited colleges are three schools that appear in "Class B" in Recommendation 13 of Circular 133. So it is evident that these colleges have since taken advantage of Recommendation 17 of Circular 133, which provided for recognition upon submitting evidence sufficient to convince the

Department that the minimum standard of requirements was being complied with; or that it was considered that these schools had been improperly classed in the first instance.

While it is said that laws are made for the "greatest good to the greatest number," it is also true that some laws work a great hardship to many.

Regulation XV. of Circular 150 is in part as follows: "No one of the colleges herein enumerated shall give credit to any student for any work done at colleges not included in this list." During the forty-two years from 1866 to 1908, the Ontario Veterinary College, as a two-term school, graduated 3,363 men. Of these graduated, 170 have since taken degrees in the following schools in the United States: McKillip Veterinary College, 102; Chicago Veterinary College, 35; New York State Veterinary College, 8; Kansas City Veterinary College, 8; New York College of Veterinary Surgeons, 6; New York-American Veterinary College, 5; National Veterinary College, 3; Ohio State Veterinary College, 2; United States College of Veterinary Surgeons, 2; Veterinary Department, University of Pennsylvania, 1; and American Veterinary College, 1. One of these men graduated at the National Veterinary College, and later at the New York State Veterinary College; another graduated at the New York-American Veterinary College, and later at the McKillip Veterinary College, while still another graduated at the McKillip Veterinary College, and finally at the Veterinary Department, University of Pennsylvania. Some of the colleges just mentioned have always been three term schools, others have not; but in nearly all of the cases referred to the schools were maintaining a three-year course at the time of the attendance of the Ontario graduates.

A study of the catalogues of the colleges enumerated, as regards residence and present lines of work, discloses in a measure the probable motive leading these men to supplement their Ontario education. Many of them were from states requiring the possession of a diploma from a three-year school as a qualification to practice, while others who had graduated from Ontario

subsequent to 1897, and desired to enter the Bureau of Animal Industry were obliged to return to a three-year school for a third term, and graduate, in order to become eligible to the civil service examination for an inspectorship. Forty of the Ontario graduates who subsequently graduated at the McKillip Veterinary College are Canadians, many of whom are residents of Manitoba, in which province a diploma from a three-year school is prerequisite to the establishment of a legalized practice.

Regulation XV. puts a stop to all this; for as I understand it, and as it is interpreted in letters which I shall read to you, received by Ontario graduates, from a number of accredited colleges, no graduates of this institution can now be allowed any advanced standing whatever. (At this point letters were read from four different accredited colleges to Ontario graduates, informing them in no uncertain terms that they could be allowed no credits whatever.) This means, therefore, that, should any graduate of this school desire in the future to enter an "accredited college," it will be necessary for him to matriculate as a freshman. This is preposterous when we stop to think of the men in our profession in the United States and Canada of national reputations whose veterinary education according to this regulation amounts to *absolutely nothing*. According to this regulation, the Ohio State Veterinary College, the Chicago Veterinary College, the McKillip Veterinary College, the Indiana Veterinary College, and the United States College of Veterinary Surgeons have at the present time prominent faculty members, graduates of the Ontario Veterinary College, who could not be allowed a moment's credit in the colleges in which they teach. Surely this is an anomalous condition of affairs.

I also wish to call your attention to the fact that, according to another regulation (XI.) of Circular 150, none of the faculty members just referred to can be considered as one of the five graduate veterinarians necessary for an accredited college to have on its faculty; for the reason that this regulation prescribes that these veterinarians must themselves be graduates of accredited schools. In other words, they do not count, and cannot



teach major subjects as is required by still another regulation (CHIL.). So, at the present time, one of the greatest comparative anatomists in this or any other country is teaching anatomy, one of the most celebrated practitioners of veterinary medicine in the United States is teaching the Practice of Comparative Medicine, and one of the best known and ablest surgeons in the Middle West is teaching surgery, all major subjects, in the colleges previously mentioned, regardless of the restrictions of Circular 150. Will these men be forced to give up teaching because they graduated from the Ontario Veterinary College, and have not since graduated from an accredited veterinary college? They certainly must if the regulations of Circular 150 are to be enforced.

Within a very few years Ontario graduates have held positions ranging from a dean to instructor in the Veterinary Department, Iowa State College, the New York State Veterinary College, the Veterinary Department, Columbian University, and the Kansas City Veterinary College.

Some might say, "Oh, well, the men to whom you refer have already made their mark in the profession, and care nothing for the predicament that you picture." Be that as it may, but how about the younger men who have graduated during the past ten or fifteen years who have proven themselves able and progressive practitioners and a credit to any profession? Possibly some of these men would like to enter an "accredited college."

Circumstances might arise on account of his own ill health, or that of some member of his family, requiring the removal of such a man from the state in which he has practiced, to a state whose laws prescribed the possession of a diploma for a three-year school. This man is now barred from the privilege of entering a three-year college except as a freshman, and must either begin his veterinary education anew, or retire from the profession. Surely, gentlemen, this is not a pleasant thought to the forty-two graduates of the Ontario Veterinary College in the State of Minnesota, who, under the circumstance just mentioned, would awaken to find that, like Othello, their occupation was gone. There are men in this association of whom we are all



proud; but according to Regulation XV., the time they spent at the Ontario College counts for naught, should they desire to obtain a degree from an accredited school. "Comparisons are odious," and it is far from my purpose to start a discussion of the relative merits of different colleges conducted in the past as two-year schools, and maintained at the present time as three-year institutions. Such a discussion could end only in a series of criminations and recriminations, would engender bad feeling, and could not help in the solution of the real problem of what the profession is going to do with graduates of the Ontario Veterinary College. I fail to understand why a graduate of this school of the same mental caliber is not as well educated professionally as graduates of the American Veterinary College, the Chicago Veterinary College, the Veterinary Department, Iowa College, the Ohio State Veterinary College, the New York College of Veterinary Surgeons, the Kansas City Veterinary College, the Indiana Veterinary College, the San Francisco Veterinary College, or the National Veterinary College, during the period that they were conducted as two-year schools. We have with us here to-day several members of this association who graduated at one of the schools just mentioned, while it was maintaining a two-year course; and knowing them as well as I do, I am satisfied that they are not egotistical enough to consider themselves one whit better educated than their brother members who graduated at the Ontario Veterinary College during the identical years that they secured their diplomas from what is now a three-term school.

Dr. Rutherford is reported as having said: "The Ontario Veterinary College as a teaching institution, stands second to none in the English-speaking world." This statement was not made, however, in extenuation of the failure of this school for so many years to become a three term college, in spite of the fact that for ten consecutive years the following notice was published in its annual announcement: "A change in the period of study is contemplated....Such change will not effect students entering this year." I think it will be conceded by the faculties of the

different veterinary institutions that the Ontario graduates have since attended, that, as a general proposition, they have been able to carry on their work with considerable credit to themselves and satisfaction to their instructors.

As examiner in anatomy and physiology on our State Board of Examiners in Veterinary Medicine and Surgery, I wish to state that of the twenty-six candidates examined by the board at its last meeting, a large proportion of whom were three-year graduates, the best papers in my branches were written by a 1908 graduate of the Ontario Veterinary College. There were ten questions in each subject, and the papers turned in by this man were well nigh perfect. In all fairness, however, I am forced to admit that a graduate of the same school, and of the same year, made a miserable failure of the entire examination.

Gentlemen, I appeal to you; and in the words of the prophet would say, "Come now and let us reason together." Shall we say to graduates of the Ontario Veterinary College, "You have no right to improve yourselves so that you may conform to present laws and regulations, except under the penalty of beginning anew your professional education; otherwise be content to remain as you are, hampered by the limitations that surround you?" If the conditions imposed by Regulation XV. as affecting all graduates of the Ontario Veterinary College are unjust, unfair, and clearly detrimental to the best interests of the profession, in that it prevents able, honorable and progressive veterinarians from improving their condition, is it not possible to bring about some modification of this regulation?

What is the best method of procedure in any attempt to secure modification of Regulation XV.? I confess that I do not know. It is my opinion, however, that all members of the veterinary profession who believe in "a square deal" should interest themselves in this question regardless of where they secured their veterinary education.

Do not expect the older Ontario graduates to display any special interest in this matter, unless the discount placed upon

their education since August 9, 1909, has disturbed their equanimity of mind.

They consider that when they graduated, their education was as good as the best. They have been eligible to membership in the American Veterinary Medical Association, and to the examination for inspectorship in the Bureau of Animal Industry, for many years. They are generally well satisfied with themselves and with conditions as they exist, and may even inform you that the Ontario Veterinary College richly deserves all of the censure that has been heaped upon it in recent years, for not becoming a three-term school long ago. This is undoubtedly true, but is begging the question—Are graduates of the Ontario Veterinary College entitled to credit upon entering any of the accredited colleges listed in Regulation XXIV.? If so, to how much credit are they entitled, and under what conditions?

There are a few other schools not included in the list of accredited colleges. Some of them, as, for instance, the Veterinary Department, Detroit College of Medicine, and the Ohio Veterinary College (not to be confounded with the Ohio State Veterinary College) are not now in session. Graduates of the two schools just mentioned are members of both the American Veterinary Medical Association, and the Bureau of Animal Industry. Of course the graduates of all these schools are in the same predicament as are those of the Ontario Veterinary College, so far as Regulation XV. is concerned; but fortunately they are comparatively few in number.

I wish it to be distinctly understood that in the preparation of this paper I have no "axe to grind," and that personally I am not affected by this regulation to which I take exception.

I shall be satisfied if, in this disconnected and rambling discussion of the situation, I have succeeded in bringing you to a realization of the paradoxical condition of some of the matters pertaining to veterinary education. I trust that in any discussion that may follow the reading of this paper, some argument will be advanced that may assist in the solution of the problems I have brought to your attention.

## ABORTION IN CATTLE.\*

BY RALPH H. JOHNSON, (C.V.C.), FARMINGTON, MINN.

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Abortion is expulsion of a foetus before it is viable; embryonic before the fourth month, foetal, after the fourth month, and the young creature is either dead when expelled, or dies immediately afterwards. Premature birth is often viable and will not be of any consideration under this subject. There is not the same tendency or readiness in all the domesticated animals to abort. The bitch, cat and sow rarely do so even after serious injuries; but sheep and goats are rather liable to this accident; also the cow and mare; but more especially the cows, which most frequently lose their foetus. Abortion is much more frequent during the first than the second half of pregnancy.

If abortion occurs at a very early period, it may escape intact and the ovum unnoticed, without any disturbance whatever of the health of the female. Abortion is more serious when it occurs at a late period: as it then not only causes the loss of the young animal; but it may compromise the value of the mother or in fact end her existence. Abortion presents itself in two distinct forms: 1st. Sporadic, or accidental abortion. 2d. Enzootic, epizootic or infectious abortion.

**SPORADIC OR ACCIDENTAL ABORTION.**—When cases occur here and there, on farm or breeding establishments, over a wide extent of country without any relationship as to causation, it is termed sporadic or accidental abortion.

**CAUSES.**—The causes of sporadic abortion are very numerous and will be arranged as: 1st. External causes. 2d. Internal causes.

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\* Read before the Minnesota State Veterinary Medical Association, January 12-13, 1910

**EXTERNAL CAUSES.**—Atmospheric influences, bad weather, or irregular seasons, are predisposing to or cause abortion, and there can be no doubt whatsoever that cold, “(and, especially when suddenly applied)” to the skin, may produce abortion; and hence it is that the abrupt setting in of cold weather, is often marked by abortion among animals exposed to it. The continued and severe cold of winter is far less frequently productive of abortions than when cold, wet, or frosty nights in autumn, succeed fine warm days; cold rain is sometimes very damaging in this respect. With regard to the food and drink in general we often have an undoubted cause. Food of bad quality, indigestible, or containing injurious ingredients, is well known to be dangerous; often unfavorable seasons, when forage has not been well dried and made assimilative are of more frequent occurrence. Indigestible food or that which has a tendency to collect and ferment in the stomach and may by exerting pressure on the womb produce abortion. On the other hand, too great an abundance of easily digested stimulating food, by inducing a superabundance of blood, and consequently congestion of the womb, and loosening of the after-birth, has been set down as another cause, frozen food, or water, when taken in immoderate quantity, and especially if the stomach is nearly empty, as well as forage or herbage covered with snow or frost, are also injurious to the larger animals when pregnant, and abortion immediately follows.

Filthy, putrid water frequently has a destructive influence on gestation. Some plants, such as horse tails, sedges, etc., also the leaves of beet root readily induce abortion. Rue, ergot of rye, and other abortive remedies will have a tendency to cause abortion; also poisonous substances such as cantharides, will do the same.

Physics of a drastic kind, opium, digitalis, and other drugs and ergotized grasses are causes of abortion.

Excessive muscular exercise is very likely to produce abortion; and especially if there are indications or a predisposition to abort. If the exertion is sudden and severe, or even moderate,



but coming after a period of rest, it is all the more certain to produce abortion.

Wounds to the abdomen by kicks or falls, or by squeezing through a narrow doorway, blows and shock, keeping the animal in stalls with floors that incline backwards are all causes. Access of the male, or exploration of the vagina will also cause muscular contraction of the womb which will result in abortion.

Surgical operations, bleeding, or throwing a pregnant animal down, is dangerous.

Excitement, fear, sudden surprise, or danger, heavy thunder, dog running among pregnant animals, especially nervous animals.

2d. INTERNAL CAUSES.—Badly fed and neglected animals sometimes abort, but not nearly so frequently, perhaps as those in the opposite condition, and extremely fat. It is generally admitted that with some animals there is a special disposition to abort, and sometimes without any noticeable cause, or a very trifling cause, as previous abortion, will induce abortion, while other animals never lose their foetus, though exposed to the influence of apparently most powerful causes. The disposition to abort sometimes disappears as age advances.

A more constant and potent cause, is to be found in the presence of grave diseases, and especially those which affect the system generally, producing more or less derangement of all the functions. The various serious epizootic maladies, inflammation of the bowels and all those abdominal disorders which give rise to restlessness, bloating, cough, as well as those diseases which induce cough, as bronchitis, pneumonia, asthma, etc., pleurisy, and other affections, and injuries, accompanied by great pain; as well as nervous, or convulsive derangements, such as lock-jaw, epilepsy, vertigo, etc., are all set down as causes. In acute disorder of the mother which is attended by fever, the foetus may perish from the abnormal accumulation of heat; certain virulent disorders as foot and mouth disease, and tuberculosis, may cause the death and expulsion of the foetus; dropsy of the head, dropsy of the abdomen, and general dropsy, may also lead to the



death of the foetus, and is almost a certain determining cause of its expulsion. Faulty formation or relations, between the after birth, malformations of the foetus, and malpositions, are other causes, and the presence of several foetuses, also often leads to abortions.

Diseases of womb will be very likely to lead to abortion; inflammation of the womb, as well as new formations, such as tumors and cancers, ovarian dropsy, etc., will predispose to, or excite abortion.

Abortion has not infrequently been ascribed to some defects, or other influences, in the male; as debility, arising from too frequent usage, also poor health, and there is abundant evidence, that a male enfeebled by too much use is very likely to be a cause of abortion in females to which he is mated. Abortion has been said to occur when the male was larger and more powerful than the female, various injuries as external violence may, not only injure the womb, so as to produce abortion, but the foetus may sustain bruises and damage. The foetus may be poisoned by food or medicine which do not produce any noticeable effect on the parent.

**SYMPTOMS OF SPORADIC OR ACCIDENTAL ABORTION.**—The symptoms of abortion are extremely varied; abortion may occur without any symptoms, or demonstrations, so far as the female is concerned; while in others the symptoms indicate a serious condition, and this usually depends on the period of pregnancy at which the accident occurs.

Generally, abortion takes place without any previous indications and the animal may be as well and lively as usual, up to the time when the foetus is expelled; and the expulsion itself is so sudden, so prompt, and accomplished with so little visible effort or disturbance, that the accident in most cases receives very little if any notice; when this simple abortion has taken place during the day, it has been noted that the flank falls in a little, the abdomen descends, the vulva and vagina slightly dilate, and there escapes from them a glutinous (sometimes tinged with blood) fluid with which the foetus is passed almost without effort.

so little disturbance does this kind cause that the animal will not require treatment with the exception of a little care from exposure for several days.

In what is termed laborious, difficult, or complicated sporadic abortion, which is often due to external causes, such as injuries, the preceding symptoms are generally well marked. The animal suddenly appears dull and peculiarly dejected; or it is restless, uneasy, and continually moving about, the appetite is lost, moaning is emitted every now and then; the pulse is quick, small and hard as in hemorrhage; progression is difficult and unsteady, the expression is anxious and respiration hurried; when the foetus is alive, there is less prostration and much abdominal pain, the animal often looks anxiously towards the flank, stamps with its hind feet, moves from side to side, lies down, gets up again, whisks the tail incessantly, and exhibits every indication of increasing restlessness; at the same time the abdomen loses its round shape and drops; if the animal is in milk, the udder becomes soft and diminished in size more or less rapidly, while the milk secretions diminish; but if the animal is not yielding milk, then on the contrary, the udders enlarge, and become swollen, the vulva is puffed and swollen, and from it escapes a tenacious mucus, streaked with blood, and if the foetus is dead, this mucus has a more or less foul odor.

In the case of more than one foetus it may happen that the one nearest the mouth of the womb is dead, and is expelled, the other being alive is retained until pregnancy is complete; or the contrary may occur, the living foetus being next to the mouth of the womb, prevents the escape of the dead one, and thus being kept in the womb until the delivery of the other takes place, becomes compressed or mummified; when abortion suddenly sets in and nothing is prepared for its being carried to a successful termination, the mother becomes exhausted by ineffectual efforts, and soon passes into a critical condition; abortion differs from normal parturition chiefly in the state of the neck of the womb.

Abortion is always a serious accident if only from the loss of the foetus. It is frequently complicated by hemorrhage; which

may have been the first cause of the action of the womb; it may result in the rupture of the womb from the efforts the animal makes to overcome the resistance offered by the neck of that organ; indeed we may have the usual complications that attend parturitions. But in many cases the complications are few and trifling, the animal experiences very little inconvenience when the accident occurs before the fifth month, the secretion of milk is generally interrupted, often for a year, as the udders have not had time to experience the reflex or sympathetic influence which stimulates them into activity; when however it takes place in the last half of pregnancy the secretion may be established, though the yield is usually diminished, and the glands do not furnish their usual quantity until the next pregnancy; abortion may produce protrusion or prolapsus of the uterus and even the rectum. When abortion takes place during the latter half of pregnancy, the foetal membranes are frequently retained, wholly or partially.

In the simplest cases of abortion "heat" appears in the cow in from one to two weeks after, the abortion and conception may occur then; but frequently impregnation does not take place until after several returns of "heat" and often a whole year elapses before impregnation. In other cases "heat" does not appear until the full interval of regular pregnancy has elapsed, and then the animal conceives almost as readily as before the mishap. Another very common result is the tendency to abortion after every conception, while with some other animals there remains an almost persistent state of "heat" accompanied by barrenness.

**DIAGNOSIS.**—In the diagnosis we have to determine if abortion is in progress, and to do this in time to prevent it is not easy; although, it is very easy to distinguish during, or after the expulsion of the foetus. But when abortion first manifests itself, the symptoms attending it are very misleading.

**EPIZOOTIC, ENZOOTIC, OF INFECTIOUS ABORTION.**—This differs from sporadic abortion, particularly from its attacking all pregnant animals.

So long ago as the end of the last century, contagion or infection was believed to play the principle, if not the sole part in many outbreaks; for it was observed that when a cow aborted in a place where other pregnant cows were kept, these would abort in succession, until all, or nearly all had aborted. The bad hygiene of cow shed and stables appear to have no influence on abortion, as it appears quite as severely and readily in those which are well ventilated and cleaned as in those in the opposite condition; in fact nothing can so well explain the occurrence of particular outbreaks of epizootic or infectious abortion, as the presence of a contagious infection.

It has been proven and established by microscopical investigation, that on the lining membrane of the vagina and vulva there is constantly found a minute fungus mixed with the mucus, which is a kind of bacilli or microbe. Toward the period of parturition these bodies become extraordinarily abundant; and they seem to cause the decomposition of the foetal membranes and their expulsion; when the placenta and membranes are retained and putrify in the womb, these microbes are extremely numerous.

It has been asserted that it is sufficient to introduce into the vagina some of these microbes, which will multiply there, and penetrating to the womb, commence their work of decomposition to produce abortion. In cases where these microbes were inoculated in cows which were pregnant from five to seven months, in twelve, fourteen, twenty-one days after the inoculation they aborted. It has also been shown that by smearing the canal of the vagina of a pregnant animal to a certain depth with the matter from the expelled membranes of one which has been delivered, abortion can be induced. There is sufficient proof that infectious abortion is caused by a specific germ or microbe, that when transmitted from one animal that has aborted, or from the aborted foetus, or its envelopes to another pregnant animal of the same species will cause it to abort.

The microbe may obtain introduction to the genital passage through actual contact with these matters, or the air may carry it to them when the discharges have become dried.

In the animal which has aborted the previous year, and is afterwards barren, a mixed variety of microbes will be found, while the matter obtained by scraping the lining membrane of the womb gives a slightly acid reaction, which is undoubtedly, the cause of the animal being incapable of impregnation, as the male generative germ cannot retain vitality in other than an alkaline medium.

**SYMPTOMS.**—It is rare that this kind of abortion occurs before the first third of pregnancy has passed; more frequently it occurs during the second half of pregnancy. There are no premonitory symptoms except perhaps a trifling uneasiness for a few hours previous, with sinking of the flanks, and descent of abdomen. The animal generally looks well and hearty, and yields its supply of milk as usual; and soon after the foetus is expelled, apparently without any effort or inconvenience, and along with its membranes, "if these are not ruptured," with or without them when they are ruptured.

It is rare however that the ruptured membranes are ejected immediately after the foetus; as a rule they are retained, particularly when pregnancy is advanced; when the membranes come away slowly the animal generally loses its appetite and condition, goes off its milk, and sometimes perishes. If the animal recovers "heat" appears unnaturally frequent, though conception is infrequent and barrenness common; and on the other hand, there are some animals which expel the membranes quickly, conceive soon after, but again abort as readily, perhaps three times in the course of a year. The foetus is usually dead, though when it is expelled during the second half of pregnancy, it may be alive, but it is weakly and soon dies even when born near the termination of pregnancy. These newly born animals make a rattling noise when breathing, accompanied by discharge of a rusty colored mucilaginous fluid from the nostrils, they are attacked by diarrhea and are always emaciated and flabby.



## **A FEW ANIMAL DISEASES OF INTEREST TO THE GENERAL PRACTITIONER OF HUMAN MEDICINE.\***

By **GEORGE R. WHITE, M.D., D.V.S., NASHVILLE, TENN.**

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The title of this paper suggests the necessity for the study of Comparative Medicine by the human as well as by the veterinary practitioner. To obtain the requisite amount of knowledge of comparative medicine, the relationship of human and veterinary medical science should be brought into closer contact. In other words, the practitioners of these two great branches of medical science should co-operate to the fullest meaning of the term and work together hand in hand for the relief of suffering humanity and the uplift of the human race. Knowledge disseminated in such a manner would be well and thankfully received.

From the standpoint of science, animal diseases of any nature should interest the human physician, but he should be doubly interested in those diseases of animals which are transmitted directly or indirectly to the human race.

The diseases which are directly or indirectly transmissible to man are not so numerous but that any progressive practitioner could by a little study master them. The law of self preservation should impel him to do this if for no other reason.

The time has long since arrived when the human practitioner as well as the practitioner of veterinary medicine should have a more comprehensive idea of the scope and extent of available knowledge of comparative physiology and comparative pathology. I dare say that none of you who are present on this occasion will gainsay the above assertion. The relationship of

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\* A paper read before the Nashville Academy of Medicine and Davidson County Medical Society, May 31, 1910.



diseased meat and impure milk to public health, is a question which should vitally interest every one, especially the general practitioner of human medicine. The proper regulation and control of a Municipal Meat and Milk supply requires stringent laws and their diligent enforcement under the direction of a well qualified and non-political Board of Health. In their enforcement the health board should avail themselves of the united services of the bacteriologist, the chemist, the physician and the veterinarian, together with the co-operation of the progressive dairyman and butcher.

The individual technical knowledge of any one of the above mentioned scientists is not sufficient to cope with so complex and momentous a problem. Their united knowledge together with their most diligent efforts are absolutely necessary if the public health is properly subserved.

The diseases of animals that should be of special interest to the general practitioner of human medicine are those diseases which are transmissible to man indirectly through the medium of meat and milk or those which are transmitted by direct contact, or direct contagion.

In the light of our present day knowledge, the qualified general practitioner of human medicine should be able without hesitation or unnecessary delay to make a reasonably correct diagnosis. He should furthermore be able to as quickly recognize the possibility or probability of the disease in question being of animal origin. If from animal origin he should say without hesitation whether it has been transmitted through meat or milk or by direct contagion.

I shall not burden the members present in enumerating the various symptoms of the numerous diseases as observed in the animal. Neither shall I go into any elaborate description of any of them as that would be as useless as it would be burdensome. Suffice it to say that most of the diseases that will be mentioned, present definitely well defined symptoms whereby their diagnosis is made easy to the qualified veterinarian.

### ANTHRAX.

Anthrax is a true septicaemia caused by the bacterium anthracis and is one of the oldest of the known infectious diseases of animals. It is readily communicable to nearly all warm blooded animals.

It is communicable to man by the alimentary tract through the medium of meat and milk or any other food containing anthrax bacilli.

It is transmitted by infection of skin wounds and in this form is known as "Carbuncle Disease" on account of its local manifestation. By inhalation the bacillus may enter the respiratory tract.

Anthrax is of especial historical interest from the view point of bacteriology as it was the anthrax bacillus which has the distinction of being the first disease-producing germ, stained, isolated, cultivated and described, by the late Prof. Robt. Koch in the year 1875. This was the beginning of our present day knowledge of bacteriology.

### GLANDERS.

Glanders is a contagious disease of the horse and many other animals. It is directly transmissible to man by actual contact with the glandered animal or by handling harness, curry combs, brushes, or other articles which have come in contact with the infection. It is caused by bacillus mallei, and chiefly attacks the lymphatic system. Glanders rapidly terminates fatally when it attacks man. However, horses may linger for months or even years with this loathsome and dangerous malady. Veterinarians, stable attendants, and others closely associated with horses are particularly liable to infection.

### FOOT AND MOUTH DISEASE.

Foot and mouth disease is a highly contagious disease of animals, especially cattle. Its specific germ has not yet been isolated and cultivated. It manifests itself by ulceration around the feet and in the mouth. Foot and mouth disease first ap-

peared in America in 1870, was stamped out after spreading over several of the Eastern and New England states. There have been at least two other widespread outbreaks during recent-years which caused great anxiety and heavy financial losses. America is now free from foot and mouth disease infection, however it is liable to reappear at any time from foreign sources unless rigid quarantine measures are constantly enforced. This disease is transmitted to man through the medium of milk from affected cows.

#### TRICHINOSIS.

Trichinosis is a parasitic disease due to *trichina spiralis* which becomes imbedded in the muscular tissue of animals, principally swine. This disease is transmitted to man through the medium of infected meat, which has been eaten raw or imperfectly cooked. Upon the ingestion of meat containing living trichina the parasites are liberated through digestion of the parasite-containing sacs and their surrounding capsules. These in time develop into mature worms in the intestinal tract. The male parasites only live for a short time. After death they are discharged with the feces, while the females penetrate into the crypts of lieberkuhn and deposit their young. These young parasites are taken into the blood and are deposited by it into all parts of the body, thereby gaining access to the muscular tissue. After becoming imbedded in the muscular tissue they begin to migrate or wander in different directions which accounts for the excruciating pain of this disease. Not less than 2 per cent. of all American hogs are infected with *trichina spiralis*. When this parasite invades man the mortality will average 30 per cent.

#### Cow Pox.

The specific cause of cow pox (*variola bovina*) is not definitely known. A number of different micro-organisms have been isolated but no experimenter has yet been able to reproduce the disease in other animals by the injection of either one of the suspicious varieties yet found. We do know that the virus of

cow pox is quite virulent unless exposed to direct sunlight or to the action of germicides.

In the absence of vaccine protection cow pox is readily transmitted to man by direct contact with affected animals.

#### ACTINOMYCOSIS.

Actinomycosis is an infectious disease caused by the Ray fungus.

This fungus gains access to the tissues—usually the cheeks, jaw or tongue of cattle—through wounds or abrasions in the buccal mucous membrane. These fungi multiply and by their irritating effects on the soft tissues and bone stimulate the formation of new growths, which in many instances attain great size. These masses have a tendency to suppurate and sometimes slough. The natural habitat of the Ray fungus is on grasses and plants. Rye and barley, the beards of which penetrate or abrade the mucous membrane, thereby allowing the fungus to invade the tissues.

Inhalation of the fungus produces nodules in the lungs, which at a casual glance may be mistaken for tuberculosis. Actinomycotic lesions have been observed in every organ of the body, but in the great majority of the cases the jaw alone is involved.

When the udders of cows contain the actinomycotic nodules, the Ray fungus may escape into the milk and thereby infect man.

Man may also become infected through the medium of eating raw or imperfectly cooked meat from actinomycotic animals. Especially is this true when the affected parts are used for human consumption. It may also be transmitted by infection of open skin wounds which have come into contact with the fungus containing pus.

#### TAENIA ECHINOCOCCUS.

*Tænia Echinococcus* is one of the most widespread tape worm infections of dogs found in this country. Many other animals, including man, harbor the cystic form of this parasite. These ova (*Echinococcus Polymorphus*) are the direct cause of Hy-

datic Cysts of man, who is its intermediate host. In the cystic form it is an extremely dangerous parasite. This disease is spread by dogs devouring the parasite-containing offal from infected hogs, cattle and other animals. The detached segments of the tape worm pass from the dog with the feces to the ground where they liberate numerous ova. These ova, or microscopic eggs, become distributed over the ground and finally contaminate the water and food supply of man. In man the Hydatid Cysts may develop in the brain and elsewhere, producing distressing symptoms and fatal results. Hence it will be observed that the destruction of Echinococcus containing organs and parts of infected carcasses by the meat inspector is of great health and sanitary value.

#### BEEF MEASLES.

Beef Measles is the larval stage (*Cysticercus Bovis*) of the common "Beef tapeworm" (*Tænia Saginata*) of man. The ox is its intermediate host. The ovum upon reaching the stomach of the ox is hatched into an embryo, these embryo penetrate the tissues and gradually migrate to various parts of the animal's body where they form cysts (beef measles). Should a human being eat raw or imperfectly cooked beef infected with these cysts containing the living larva, they would become infected with that widely distributed tapeworm known as *Tænia Saginata*.

#### PORK MEASLES.

Pork Measles is the larval stage (*Cysticercus Cellulosæ*) of the common "pork tapeworm" (*Tænia Soleum*) of man, which is as you all know the Armed Tapeworm, and difficult of removal. Each segment which is passed to the ground with the feces contains many ova. The ova infect the water and food supply of the hog which is its intermediate host. In the hog's stomach the ova hatch the embryo, these embryo penetrate the intestinal wall and migrate into the muscular and other tissues where they form cysts (pork measles). Should man eat raw or imperfectly cooked pork infected with the cysts containing live



larva, he would become infected with the tapeworm known as *Tænia Soleum*.

#### BOVINE TUBERCULOSIS.

There is available at the present time indisputable evidence to convince the most conservative that bovine tuberculosis is readily transmitted from the cow to man through the medium of milk, butter and meat. When we realize that not less than 10 per cent. of the dairy cows supplying Nashville with milk have been found by tuberculin test confirmed by post-mortem examination, to be affected with tuberculosis we are warranted in concluding that a certain per cent. of the tubercular patients in Nashville contracted the disease from bovine sources. It was only last week that the writer found twenty-two tubercular cows in a single dairy herd which was supplying Nashville with milk. The local situation warrants the most stringent enforcement of the present laws, relative to dairy inspection. While our present system of dairy supervision is better than formerly, I have no hesitancy in pronouncing it a mere farce in many respects.

#### RABIES.

Rabies is an acute infectious disease transmitted from animal to animal or from animal to man by the bite of rabid animals or by direct inoculation. It is not possible to transmit rabies through the medium of milk or meat of affected animals, neither is it possible to become infected by mere direct contact with the rabid individual. Rabies appears most frequently in the dog and by him is disseminated to other animals, usually in a circumscribed neighborhood, and the result is that numerous human beings may be bitten before all the affected animals are destroyed. All warm blooded animals are susceptible to rabies. The period of incubation varies from 18 days to as long as two years. The infective virus of rabies exists in the spinal cord, brain and saliva of the affected animal, it has never been found in the blood. It is not necessary for me to enumerate all the symptoms of rabies as observed in dogs. Suffice it to say that whenever a dog is ob-

served with lower jaw dropped (mouth open) and dirt on tongue, the case is suspicious and the animal should either be killed or confined. If a person has already been bitten never kill the dog until it has been examined and the case diagnosed by a qualified veterinarian, after which have the veterinarian's diagnosis confirmed by a bacteriologist. The finding of Negri bodies is diagnostic. If the animal is really rabid, then without hesitation or unnecessary delay suggest Pasteur treatment.

In conclusion I would like very much to emphasize the importance of a Chair of Comparative Medicine in each medical college faculty, and the necessity of each practitioner of human medicine devoting at least a part of his leisure time studying Comparative Medical Science. If a man can afford to devote three years to the study of veterinary medicine and four years to the study of human medicine, making a total of seven years of his life to the study of medical science in order to qualify himself to treat horses, dogs and cats, then how can there be any valid objection to at least requiring a prospective practitioner of human medicine to better qualify himself before undertaking the responsibility of dealing with valuable human lives.

IN reproducing a part of an account of the annual field day of the Louisiana Sugar Planters' Association from the New Orleans *Daily Picayune* of June 10, in our July issue, we unconsciously reproduced some errors of the *Picayune* reporter. Significant among them was the statement that Dr. Dalrymple had expressed his hope that the legislature would see fit to make an appropriation so that the work could be properly carried on, and stated that Secretary Wilson had been asked for an extra appropriation of \$100,000 to complete the work." This \$100,000 referred to the initial appropriation of three or four years ago, when Dr. Dalrymple was one of the delegates who went to Washington in the interests of this cause. Since, then the federal government has appropriated \$150,000 and \$250,000, and no doubt will have to appropriate more before the work of tick eradication is completed.

SOUTHERN ILLINOIS VETERINARY MEDICAL AND SURGICAL ASSOCIATION meets at Anna August 2, 3, 4

## **GRANULAR VENEREAL DISEASE OF CATTLE—INFECTIOUS VAGINAL CATARRH—INFECTIOUS VAGINITIS.**

BY A. I. SORENSEN, V.S., MODESTO, CAL.

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In my practice in a large dairy community, I have come across a disease which from the symptoms I consider the same disease reported by European writers and also by Dr. W. L. Williams of the N. Y. S. V. C., at Ithaca.

The disease so far as known is purely venereal, transmitted generally, if not always, by coition, though being capable of being transferred by other means.

The malady has been recognized for twenty years and has been observed and described by numerous veterinary authors in Germany, Switzerland, Italy, Denmark and Austria. While not of importance, as related to the life of the affected animal, it becomes in other respects a very serious malady as affecting the dairy interests. It is highly contagious, affecting in dairy zones from eighty to ninety per cent. or even more of the total number of cows.

It is a fertile cause of enzootic abortion. Some reports state that more than fifty per cent. of the cows abort. After the malady has prevailed in a dairy herd, a large proportion of the cows become sterile, partly because of cystic ovaries, accompanied by nymphomania. In fact, this malady appears to be one of the common causes of nymphomania with ovarian cysts.

During the course of the malady and as a result of the direct irritation from the abortion and other interruptions, there is a great loss of milk, it deserves to rank among the most serious of dairy plagues.

**ETIOLOGY.**—According to Ostertag and Hecker, the affection is due to a streptococcus consisting of six to nine cocci, which are held together by a delicate capsule.

In artificial cultures, either alkaline or acid, and at the body or room temperature, the organ grows vigorously.

The disease is readily induced in healthy cows by vaginal inoculation with pure cultures or by discharges from the vagina of a diseased animal.

Attempts at experimental transmission to other animals have proven negative. Sometimes the transmission of the disease occurs through ordinary contact without sexual intercourse. It may be accidentally transmitted to heifers and calves.

**SYMPTOMS.**—According to Ostertag, a vaginal catarrh becomes established within two or three days after artificial inoculation, while, by natural or coital infection, one or two days elapse before the catarrh becomes apparent. Rabiger observed vaginitis and catarrh in twenty-four hours.

The first symptoms of the malady to be noted consist of swelling of the labiae of the vulva and diffused or streaked reddening and swelling of the vulvo-vaginal mucosa, with tenderness of the parts. The inflamed area is covered somewhat by a muco-purulent discharge.

A day or two later there develop in the vestibule of the vulva along the floor of and sides about the clitoris numerous small nodules  $1/16$  to  $1/8$  inch in diameter, which are at first a dark red, later becoming lighter in color. These nodules are smooth and of very firm consistence and somewhat regularly arranged in panel rows.

The nodules consist essentially of hypertrophied papillary bodies. If the vulva is held open and reflected light thrown into the cavity, the nodules can be readily distinguished; they are also readily recognizable by the sense of touch.

The mucous membrane is swollen, red and sensitive, bleeds easily upon manipulation and is covered by an inodorous mucus or muco-purulent secretion, which, flowing from the vulva, soils the labia, tail and adjacent parts, where it dries in brown crusts.

or, if in larger amounts, may flow from the vulva in long, ropy masses. The denudation of the mucosa renders it quite sensitive to the passage of urine over it, and the pain and irritation in the part tends to cause urination with abnormal frequency.

When the disease extends into the cavity of the gravid uterus, which appears to be almost the rule, abortion occurs, while in the non-pregnant cow, nymphomania and sterility, are common results.

The acute stage of the malady continues for twenty to thirty days, when the swelling and tenderness abate, and the nodules lose their red color to become somewhat yellowish or grayish, perhaps somewhat transparent, but the discharge and the granules persist for ninety to one hundred days or more.

Bulls show a comparatively high resistance to the infection, and, though they constitute the chief vehicle for the contagion, apparently suffer slightly, if at all, in most cases.

When affected, they show analogous symptoms to those observed in the cow. The penis is studded over with nodules like those in the vagina, which are easily seen when the organ is extended. Erection, copulation or manipulation of the penis causes bleeding. There is a muco-purulent discharge from the sheath of the penis, which adheres to and soils the parts.

**TREATMENT.**—The handling of the malady consists essentially of local disinfection, and, as in other localized infections, there should be a thoroughness in application conformable to the existing circumstances.

Safe recovery includes the successful destruction of the organism in all these organs and tissues. The disinfectants used must not be too irritant to the highly sensitive mucosa of the genital passages, since they induce straining, inflammation, adhesions and other disagreeable consequences. Disinfecting douches, ointments, powders and tampons have been commended, all having a common aim. Among douches, two to two and one-half per cent. lysol creolin and similar drugs; five per cent. silver nitrate, one per cent. potassium permanganate, five per cent. ichthyol; likewise with powders there is a wide variation, such



as zinc sulphate, alum, tannin and others mixed with some inert substance. In this group, which should also mention iodoform, because of its local anaesthetic action, its weight, which would cause it to drop into the depression between the elevations of the mucosa and its comparative insolubility, causing it to remain for twenty-four hours or more, presumably to be slowly converted into iodine. It has one objection in the dairy, its odor, which is liable to contaminate the milk. The prophylaxis and control of the malady is highly important and, in a general way, demands the enforcement of the usual regulations for the control of contagious diseases.

DR. R. W. POOLE, Forest River, N. D., says: "I could not get along without the REVIEW, as it is the best veterinary journal that I have ever taken.

At the Fifth Annual Health Conference at Baton Rouge, June 21, 22, 23, under the auspices of the Louisiana State Board of Health, Dr. Dalrymple gave an illustrated lecture on "Some Conditions Affecting Public Health."

### THE GLIDDEN TOUR.

Ten little Gliddenites  
Started out so fine;  
One got a punctured tire,  
Then there were nine.

Nine little buzz-buggies  
Trekking 'cross the State,  
One bust a carburator,  
And then there were eight.

Eight little automobiles  
Smelling up to heaven;  
Puff! goes the gasoline,  
Then there were seven.

Seven little touring cars  
In an awful fix;  
One stuck fast in the mud,  
Then there were six.

Six on the Glidden run,  
Glad they're alive,  
One exceeds the speed limit—  
Then there are five.

Five little benzine buggies,  
Oh, you perfect score!  
One broke a steering gear,  
Then there were four.

Four little dusty cars,  
Weary as can be;  
One lost a spark plug,  
And then there were three.

Three little old machines,  
All tried and true,  
One struck a nanny goat,  
Then there were two.

Two little autos  
On a Glidden run,  
Another one goes up in smoke,  
Then there was one.

One little Gliddenite,  
Thinking that he'd won,  
Bang! ? ? @ %  $\frac{7}{8}$   $\frac{1}{4}$  ! Biff! |||—"
 

Then there was none.

*Cincinnati Times-Star.*

## A PRACTICAL BANDAGE.\*

BY DR. UNTERHOESSEL, MUELHEIM, RHEIN, GERMANY.

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For many years past I have used a bandage which, because of its convenience of application and permanency, will undoubtedly gain many friends. It has many advantages over the bandages in ordinary use, and is a permanent dressing made of adhesive antiseptic material.

Heretofore in the *treatment of panaritium* in cattle, *hoof amputation* has had no satisfactory treatment, there has been no bandage that would prove permanent and *resist moisture and exposure to infection from stable manure*. The usual cheese cloth or even the linen bandage, though coated with tar, permits ready absorption of liquid manure to the decided disadvantage of wound healing. Such dressings, too, especially when applied to the lower extremities, prove but temporary and soon rub through and separate from the diseased part to which they have been applied.

The bandage I have used has proved ideal in just these conditions. It forms a covering like a rubber shoe when applied to hoof or claws. Being absolutely waterproof, it forms a safeguard against infection and moisture. It can be readily applied wherever a bandage can be used, over dry or moist cotton, and after two or three turns is fixed because of its great adhesiveness—an advantage in fractious animals not to be lightly passed over. Tying is by no means necessary, the ends adhere without special preparation, simply rubbing over with the palm of the hand is sufficient to secure a firm closure.

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\* *Berlin Veterinary Weekly*, February 3, 1910.

The durability of this material is quite considerable. After operation on the claws and amputations, I have seen bandages efficient for weeks after application. And in the local dairies the hygienic conditions were quite objectionable since bedding was used very economically, and the animals frequently stood in manure and filth. Yet the inner portion of the bandage remained clean and uncontaminated. This is a decided advantage which is of prime importance in panaritium. A suitable dressing after the primal operation will prevent further infection and result in recovery as has been pointed out by Francke in his tests with Thigenol.

Although this bandage forms an absolutely impermeable dressing almost like a rubber shoe, it still does not in any way interfere with the normal healing of wounds. Penetration of air to the tissues is still sufficient to maintain their vitality. By the use of cotton this condition can be controlled at will. Besides in conditions affecting the claws, this bandage is to be recommended also in all diseases and injuries of the hoof. It is of advantage in all cases in which marked and permanent pressure is desirable, especially since the pressure can be regulated at will. After many extensive hoof operations I have never observed prolapse of the soft parts when the bandages had been applied. Especially after the operation for radiating cancer when a pressure bandage is of the greatest necessity this bandage proved exceedingly serviceable.

In canine practice, too, the bandage is very useful. In locations in which permanent dressing are usually impossible, as at the end of the tail and about the joints, this bandage can readily be applied because it adheres so well. Last, but not least, it must be recommended in the cure of chronic tendon and joint thickening. Its use is indicated wherever formerly water glass and like dressings were used. The bandage adheres on both sides, so by reversing it is readily adapted to all contours forming a fixed tubular, occlusive dressing. In chronic enlargement of the tendons, galls, etc., the bandage forms a compress dressing of unusual permanency and complying with all possible requirement of

such a dressing. The degree of pressure is easily controlled by the operator.

The bandage is furnished in widths of 5 and 6 cm. and 4 metres long, fully sufficient for the average dressing. They can be specially prepared of any length desired. Widths of 2 and 3 cm. are made especially for tendon and joint enlargements.

After a trial extending over many years I can recommend the bandage warmly to all practitioners and especially to those who have many cases of foot and hoof diseases. It is certain that after a fair trial the bandage will continue to be used because of its great merits and moderate cost.

TO THE HONORARY MEMBERS OF THE ALPHA PSI FRATERNITY—As the Alpha Psi Fraternity is now in the fourth year of its history and its honorary and alumni members have increased to most gratifying numbers, the council feels the pressing need of an honorary and alumni directory to be placed in the hands of every Alpha Psi, that he may have at his command each and every brother's address for business and professional, as well as social and fraternal intercommunicating purposes.

That the above need may be gratified, the National Council is compiling a combination Honorary-Alumni Directory to be sent to press no later than Sept. 15, 1910, and in order to complete the work of the present administration, it is earnestly urged that each honorary member forward the following data to National Secretary Dr. R. E. Warren, 316 Live Stock Exchange, Chicago, Ill., at his earliest convenience: (a) name, (b) chapter that conferred the honorary membership, (c) degree or degrees (either veterinary or other educational degrees), (d) institution or institutions granting degrees, (e) year or years obtained, (f) line of veterinary work pursuing at present, and (g) location.

Should further detail regarding the above be desired, I will gladly forward same upon request.

Close attention to and strict observance of this order will be highly appreciated by the council.

Fraternally yours,

A. F. SCHALK,

President of National Council, Agricultural College, No. Dakota.

## REPORTS OF CASES.

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### CATALEPSY IN A PONY.\*

By F. C. GRENSIDE, V.S., New York, N. Y.

On December 26 last I was called to see a high-class, 14.3 pony gelding of considerable substance, presenting the following symptoms:

Every five or ten minutes the anterior extremities and neck became the seat of a violent tonic spasm lasting about five minutes. The fore legs and neck became perfectly rigid, but the hind extremities were unaffected. Owing to the agony caused by the spasms, the animal kept moving the hind legs, which resulted in propulsive efforts, so that the fore legs, which were as stiff as stakes, supported the body, and the action of the hind ones caused the animal to slide around the box stall on the fore legs. Relaxation of the paroxysm would gradually take place, and the subject would stand looking the picture of misery with head drooping, ears pendulous, and eyes closed.

In sliding around the stall the eyes became subjected to irritation from scraping and bumping against the walls, so that superficial inflammation was set up in them, and the eyelids were kept closed, and there was a muco-purulent discharge from them. For the first few hours, the attacks were frequent, and it was seldom that there was a longer interval than about ten minutes between them. They afterwards occurred at longer intervals, but did not abate in severity. As the victim became weakened from their recurrence, he would topple over forwards and sideways during a paroxysm, and lie there after relaxation came, in a sub-conscious, exhausted condition. A few hours after these seizures began, the temperature rose to 105° Fahrenheit, and did not become normal for several days after they ceased. In the

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\*Read before the April meeting of the Veterinary Medical Association of New York City.



intervals between the early paroxysms, the pulse showed strength, and would become almost normal, but as the animal became weakened from the attacks, it was frequent and asthenic. The bowels were inactive and responded very tardily to two and a half drams of aloin and repeated enemas. In addition to the physic an ounce dose of bromide of potash was given early in the attack. After this, bromide of soda was substituted for the potash, and an ounce given every four hours until three doses had been administered. Finding no beneficial effect from this treatment, I gave one grain and an eighth of apomorphine hypodermically. This was about ten o'clock at night, and no more paroxysms were observed until about ten o'clock the next morning, when they returned in all their former severity, but at longer intervals. I then gave another dose of apomorphine of one grain and no more seizures occurred, but the animal was extremely weak, and took no nourishment voluntarily. He would, however, occasionally take a few mouthfuls of water. Becoming alarmed at his weakness and continued inappetance, I began to drench him with gruel which seemed to revive him, and he gradually took to eating, and regained strength daily. In about two weeks his owner was riding him again, giving him gentle work at first, and he soon regained his normal strength and condition, and there has been no recurrence of the trouble.

This attack was undoubtedly due to too much feed and insufficient work. The owner of the pony thought a great deal of him, and was most anxious to have him looking well. He was continually asking the groom to feed him well, which he used to do whether he was working or not. On this occasion the owner did not come to ride the pony for four days, and the groom continued to feed him freely on oats and hay, and a mash every day. From such treatment we would naturally expect an attack of azoturia or, in a susceptible subject, one of lymphangitis, but in this case it led to this very unusual result.

From the available literature upon the subject, the case described would not be looked upon as true catalepsy by many authors on account of lacking the characteristic symptom of plasticity. In this case the affected extremities could not be bent into a position which they would maintain so it might be more correctly described as a cataleptoid attack. Professor Law describes two forms of catalepsy, viz., the tetanic and paralytic. This case conforms very closely to the descriptions he gives of the former.

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## HERMAPHRODISM IN A MULE COLT.

By R. H. REEDS, V.S., Hazel Dell, Ill.

The urethra is open from just below the anus down to where the rudimentary vulva is attached. The colt micturates just be-



low the anus. Just below the vulva is situated the penis, it is directed backwards and downwards. The testicles are retained in the inguinal canal and are situated anterior to the penis. The owner informs me that the penis is capable of erection. The penis is not visible, but can be felt by passing the finger up the

sheath a little way, but when erected, the owner says, the anterior end of penis is visible. In other ways the colt is normal, and is in good health.

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### SOME CASES FROM NOTE BOOK.

By R. A. STOUTE, Government Veterinary Surgeon, Barbados, W. I.

As the following cases of azoturia present peculiar symptoms, they may be of sufficient importance to be published:

Called at 7.30 p. m. to see gray horse, the property of Hon. F. J. C. History: The horse had been driven about eight miles and put away apparently well; on groom going to stable half hour later, the horse was found lame. I was telephoned for.

Symptoms.—Horse apparently in great pain, standing with off hind leg elevated; respirations and pulse both increased in frequency; unfortunately I did not have my thermometer and was unable to get correct temperature.

I examined the hoof as carefully as I could by lamp light, but could find nothing wrong. On attempting to make the horse move, I found he was also lame in the other leg.

I left, intending to return next morning, remove the shoe and again examine the hoof. Before leaving, I gave the groom instructions to watch the horse and report anything noticed by him next morning. On returning next morning, I was shown some urine passed during the night. On further examination, I found a well-marked case of azoturia. He presented no symptoms of that disease at the time of my first visit.

MULE.—The next case was a mule, one of four being driven to town from a farm nine miles from the city. After being driven about three miles, the animal began to show usual symptoms of azoturia. The carter persisted in driving him on. After going about a mile more, as he was unable to go further, he was left at a farm quite close to the road. On being led in the pen, he immediately went down.

On my visiting him, I found in addition to the usual symptoms of azoturia, that the muscles of the near shoulder were swollen to an enormous size and were intensely hard, the thickest part of the swelling being, at least, ten inches thicker than normal.

Azoturia assumes a very mild form this part of the world, the majority of cases would recover spontaneously. This is probably due to the slight change in temperature recorded in this island. We may get it as low as 60° Fahrenheit, and as high as 90°. (A fine climate for those wishing to avoid extremes of heat or cold.)

Owing to above conditions, I have never lost a case of azoturia in twenty-six years' practice.

My treatment I should like tried, although quite simple and the surroundings so different—Tincture cantharides, tincture hamamelis, aa, 10 minims every hour and hot applications to loins.

#### SOME ABNORMALITIES FOUND IN SLAUGHTER HOUSE.

A complete hermaphrodite goat. The penis protruded for about half inch through vulva, passed through floor of vagina direct to bladder. Vagina and uterus were normal; at the end of one fallopian tube was a perfect testicle, with epididymis and vas deferens complete; a small spermatic cord to the end of which was attached an ovary; on the other side of the uterus were two fallopian tubes, at the end of one a testicle, etc., on the end of the other an ovary.

A two-year old ox, in which the urachus was still intact.

An ox with no trace of gall bladder.

Two and sometimes three gall bladders in hogs are occasionally seen.

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#### TRICHINOSIS.

By JOHN OLIVER, V.S., Columbus, Miss.

Some three weeks ago there was brought to my hospital a Berkshire boar, which the owner stated had been suffering some little time. The only symptoms evinced were those of great dispnœa and swelling of the shoulder muscles, also the muscles in the throat region. The history of the case was rather obscure, and I came to the conclusion that it was a case of "a pig under the gate" and diagnosed it as an injury.

The case did not yield to treatment so I decided to destroy the animal. Upon post-mortem examination I found all the muscular tissue in the body including the heart and diaphragm

infiltrated with watery cysts the size of a grain of wheat, or a little larger. In the cysts were little centers which somewhat resembled a caseous mass the size of a mustard seed. The muscles were completely degenerated and the sheaths of the muscles held a watery pulpy mass with thousands of the cysts I have just described.

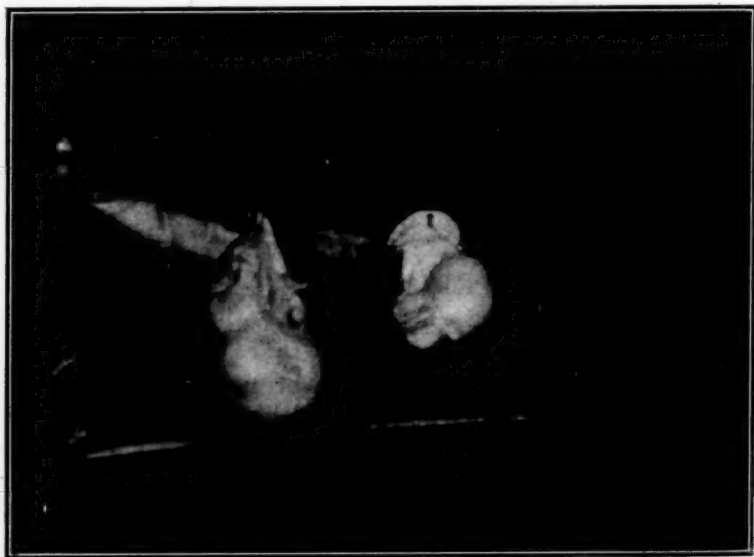
It is an easy matter to ascertain the cause of the labored breathing because all the muscles were greatly distended, and those in the region of the throat were pressing the larynx. I took a specimen to the City Hospital for examination, but have heard nothing definite from that source as yet.

Thus far I have called it trichinosis, and should like to have an expression from some of the REVIEW readers in regard to it.

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### CYSTIC TESTES WITH SECONDARY CYSTS.

By FRANK J. BAKER, D.V.M., Gouverneur, N. Y.



Weight 53 ounces. Removed from a fourteen-months'-old abdominal inguinal cryptorchid. Owned by John Hunt, DeKalb Jt., N. Y. Complete recovery.



## ABSTRACTS FROM EXCHANGES.

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### ENGLISH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

WHITE HEIFER DISEASE [*R. G. Melville, M.R.C.V.S.*].—The author says: "It is widely known that white heifers, more frequently than other bovines, provide examples of imperforate hymen. Was this case one of them? If so, why had not the rupture thereof occurred during coitus"? Indeed, this two year old white heifer has been in labor, and when the hand is introduced in the vagina to explore it, it is found that from nine to ten inches from the entrance of the vulva, there is a complete obstruction, due to a membranous diaphragm, concave posteriorly and with its circumference attached on the vagina. There is no aperture whatever to be discovered even after a most careful research. The membrane was ruptured, about a pint of fluid escaped and was followed by the two fore feet and nose of a live foetus which was extracted without difficulty. It looked like one of a six months' gestation. Bucketful of brown viscid fluid of peculiar but not offensive odor was removed. "Assuming coitus to have taken place without rupture of the hymen, by what means did impregnation take place."—(*Vet. Record.*)

GASTRITIS IN A CAT [*Arthur Whicher*].—A six months' old kitten, which gave symptoms of gastritis, was treated with aperients, enemas, bismuth and other sedatives. Nothing relieved him and he kept up vomiting. He died the third day. He had acute peritonitis. Had swallowed a piece of string having knots at both ends, one of these being too large to pass out of the stomach, the other had made its way into the bowels, and the whole of the intestines had worked themselves on to the piece of string, with the knot in the stomach as the fixed point. The intestines were cut through and the contents had escaped into the abdomen.—(*Vet. News.*)

PARALYSIS OF THE LOWER JAW [*By the Same*].—Record of a case in which the jaw was completely paralyzed, with the lower maxillary dropped six to eight inches. Strychnia, potass. iodide, liniment and massage were useless. Electric battery gave little improvement after three days, and in a week the muscles would contract so that the teeth would get in apposition when the battery was acting. Gradually improvement set in and complete recovery followed after a few days.—(*Ibidem.*)

SOME PELVIC FRACTURES [*R. H. Smythe, M.R.C.V.S.*].—1. Horse received a severe kick on the hip. No lameness follows. Worked for a fortnight, when he becomes suddenly lame on the off hind leg. Besides the usual sign of lameness, hesitancy to move forward, dropping of the haunches, rectal examination revealed swelling on the shaft of the ilium; crepitus was heard. The animal was put in slings and recovered in a month.

2. While hunting this animal fell, showed a little stiffness and got over it. A week later, being ridden, he shied and suddenly was dead lame. Rectal examination was negative. Pelvic fracture was suspected. Animal killed. Comminuted fracture through the acetabulum, the shaft of the ilium and also the pubis.

3. Bus horse fell, no lameness, worked three days after and dropped suddenly lame on off hind leg. Great pain, profuse sweating, temperature 104° F., haunch dropped only after the second day. Rectal examination negative, no crepitation. The animal is slung, a charge put over the quarter, blister, a run out to grass, and work resumed after some time.

4. Fourteen-year-old gelding has been treated for spavin, and several months later is found lame in the stall. Usual symptoms, no dropping of the haunch, nothing detected by rectal examination. Killed, there was found a recent fracture of the posterior half of the pubis symphysis with displacement and a callus on the anterior half, probably that of a previous fracture.—(*Vet. News.*)

IMPACTION OF THE OMASUM IN A CALF [*D. Meadows*].—Calf about six months old is suddenly taken with delirium. Staggering, reeling, falling and knocking itself against walls and racks. The pupils were dilated and complete blindness apparently present. There were abdominal pains but no tympanitis. Mouth and muzzle very dry, and there was a history of previous constipation. Respiration quite normal. Pulse 90, full, hard and

irregular. The animal was held down and his head tied up short to prevent self injury. One ounce of chloral was administered in two doses an hour apart without results and followed by one and one-half grains of morphia subcutaneously. The animal went to sleep. The next day he was free from trouble and violence, but amaurosis and blindness remained. He had passed hard sticks of dung. Six ounces of magnesia sulfate with soft food completed the recovery.—(*Vet. News.*)

A TYPICAL CASE OF MALIGNANT CATARRH [*Same Author*]. Two year old bullock, in good condition, stood quietly in a barn with head down and general appearance of extreme weakness and dejection. His temperature was 105.6° F. Respiration 20 to 25, shallow and with a grunt. Pulse weak and irregular, 70 per minute. No pleurisy, no lung trouble except some râles and occasional cough. There were livid patches in and around the nostrils, mouth and tongue. Abundant discharge from the nose, but no ulcers. Eyes congested with conjunctivitis and keratitis and dense opacities. Hypopion was present in both eyes. Sinuses and base of the horns hot and painful. The prognosis was unfavorable. Stimulants, expectorants, gruel drenches and careful hygienic measures were recommended, but death occurred the next day. No post mortem was made.—(*Ibidem.*)

CHRONIC INCURABLE HOCK LAMENESS [*C.H.H.J.*].—A mare, cavalry horse troop, was found one morning suddenly and acutely lame. Being unable to put any weight on the off hind leg, she moved on three legs. The hock was the seat of the trouble. The animal was placed in slings where she remained some five weeks with the lameness having subsided and a large bony enlargement being on the antero-internal aspect of the hock. There remained a great deal of soreness which, however, kept improving for about two months when the lameness returned so severe that the animal was destroyed.

On boiling the tarsal bones, there was found an extensive callus of spongy bony tissue involving the anterior and internal surface of the head of the great and small internal metatarsal, also the scaphoid and large and small cuneiform; all being firmly involved and welded together by ankylosis. The inner lip of the trochlea of the astragalus had an ulceration with erosion of the cartilage. The origin and etiology of this case are doubtful. It was probably caused by a trauma of some kind. Some say

fracture, although there was no objective sign or positive evidence, but the symptoms were very suggestive.—(*Vet. News.*)

**CHRONIC ABSCESS ON THE MESENTERY WITH FISTULA OPENING INTO THE SMALL INTESTINE: COLIC, ENTERITIS, DEATH** [*H. Kendall, G.M.V.C.*].—This grey horse was taken ill with colic after returning from work one morning. Drench was administered. The animal remained sick all day, notwithstanding the treatment applied, and died late in the evening. At the post mortem there was found slight peritonitis, with the intestines filled with fluid. On removing them "a large ovoid mass, circumscribed and firm in consistency, was found in the mesentery and firmly attached to the intestines, though not occluding the lumen. This mass was composed of dense fibrous tissue with areas of necrosis throughout. The necrotic areas were composed of dirty semi-purulent material and communicated with the intestines by means of two irregular tortuous sinuses. At the periphery of this growth was an egg shaped abscess composed of thick greyish yellow purulent material. The lungs was affected with broncho-pneumonia, evidently the result of the mal-administration of the colic drench given in the morning."—(*Vet. Journ.*)

**PARALYSIS OF THE ANTERIOR CRURAL NERVE** [*E. Wallis Hoare, F.R.C.V.S.*].—Horse kicked while in harness, gets the near hind leg entangled, and when relieved is found very lame. While standing the animal keeps his foot on the ground. When called to move, just as the extension of the stifle is to take place, he drops on the affected side and the limb cannot carry weight. If attempt is made to lift the off hind leg, the animal cannot bear weight on the affected limb. Treatment consisted in blister on the stifle joint and a run to pasture for two months. Recovery was quite slow.—(*Vet. Journ.*)

**FRACTURE OF THE PELVIS AND DEATH FROM HEMORRHAGE** [*P. R. Thompson, M.R.C.V.S.*].—Aged eight years, this hunter walking down hill makes a jump and whipped round sharply went lame on the near hind leg. Taken away, to his stall, he is found shortly after laying down with the inside of the thigh of the affected side somewhat swollen. The animal is raised, crepitation is detected over the angle of the haunch and also by rectal examination. Before slings could be had to put him in, the horse

died. Result of the autopsy: fracture right across the neck of the ilium, the bone being crushed in many pieces, and laceration of the arteries causing fatal hemorrhage.—(*Vet. Journ.*)

UNCOMMON DENTAL FISTULA IN A DOG [*Prof. G. A. Woolridge, F.R.C.V.S.*].—Young bull terrier, eight months, has distemper and needs attention. He also has a small discharging wound under the jaw, on the right side of the maxillary space. When four months old, his mother had bitten him. The wounds had healed except that one. Probed, diseased bone is detected. Under cocaine anesthesia the tract is enlarged, the cavity cleaned and a loose piece of bone removed, which proved to be the permanent tusk of that side. The absence of the tooth had not been noticed before. Dressed with chinosol, the wound soon healed. The dog recovered of his attack of distemper.—(*Ibidem.*)

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### ITALIAN REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

FATAL SHOCK DUE TO RUPTURE OF THE CÆCUM IN A MARE [*Dr. Arturo Schiavelli*].—A five-year-old Irish mare refuses her food and has severe colic. Her temperature is  $40.2^{\circ}$  C. She is restless, pawing with her fore feet, looks at her flank, and now and then attempts to lay down. Colic from indigestion is diagnosed and treated with enemas, frictions on the back and loins, chamomile tea and walking exercise. After an hour she is apparently relieved and she is returned to her stall with directions to have a muzzle put on her head to prevent her eating her bedding. She is quiet, the respiration is normal and the temperature down to  $38.5^{\circ}$  C. No complication is looked for. When two hours later she suddenly makes a jump in her stall and drops on the floor where she lays flat on her broad side. She dies in about fifteen minutes before any treatment can be applied. At the post mortem the abdominal cavity was found containing dark fluid, the peritoneal and mesenteric blood vessels were gorged with blood, the stomach was distended with food and gases as well as the cæcum and colon. On the middle third of the arch of the cæcum there was a rupture about twelve or fifteen centimeters long and involving the three coats of the organ. The edges were



irregular, and infiltrated with blood. There was no evidence of internal hemorrhage.

The mediate cause of death was evidently the rupture of the cæcum, says the author, but the immediate cause may be attributed to nervous shock.—(*Il Nuovo Ercol.*)

A CASE OF PROLAPSUS OF THE RECTUM AND COLON IN A DONKEY [*Dr. Guiseppe Pellegrini*].—Aged one and a half years, this animal has this difficulty since his birth. It came out now and then and reduced itself without difficulty. At first it was no bigger than a man's first, but as time went by the prolapsed portion increased, and now it cannot be returned in position. The animal is gay, has good appetite, a normal pulse and temperature but the attention is drawn to the condition of the posterior part of the intestines which is protruding out of the anus. It is the rectum and colon which by the movements of the animal has become more or less lacerated. The prolapsus is hanging down forming a mass, bosselated, cyanotic, cedematous and cannot be reduced. The anus is also defectuous as, although it forms a round small prominence, it is dilated and superiorly divided toward the base of the tail. Amputation was decided and performed with the animal anesthetized with injections of stovaine. A cylinder was introduced into the cavity of the intestines, hemostasis obtained with an elastic band applied round it, and the amputation of the intestines was performed with sutures round the edges of the anus, which itself had its sphincter sewn up tight. The animal did well and returned home with directions that on account of the deficiency of the sphincter ani he should be submitted to special diet and made to carry a kind of belt with elastic ring to assist the firmness of the anus. The owner saw that this was done for some time, but soon neglected it and the prolapsus returned as bad as ever. The little donkey had to be destroyed.—(*Il Nuovo Ercol.*)

OSTEOSARCOMA OF THE JAW IN A HORSE [*Dr. Guiseppe Sivieri*].—The writer was asked to attend this eight-year-old animal for a swelling, roundish in form and about the size of a nut, which existed on the right branch of the maxillary in close proximity to the root of the first molar tooth. In hearing the history of the case, he thought it a single case of osteo-periostitis and prescribed the usual treatment for such. But contrary to his expectations the tumor enlarged and soon began to interfere



with mastication. Indeed, it grew so that it showed between the corners and first molar tooth with a fistulous tract from which grey ichorous bad smelling pus run out. It was a case of osteosarcoma, for which the animal was cast, the trephine applied upon the central part of the growth, the diseased osseous tissue was scraped off and a drainage tube introduced to allow a free discharge. After a number of days this was removed, the wound allowed to close, and the remaining swelling was treated with deep pointed cauterization. The result obtained was quite satisfactory.—(*Ibidem.*)

TRAUMATIC PERICARDITIS IN A MILCH COW—RECOVERY [*By the Same*].—Pregnant and within her term, this animal, aged three years, has shown symptoms of constipation. She gets a purge and is relieved. A few days later she is off again, standing with her fore legs apart, grunting with pain and coughing. She has not laid down lately. By auscultation the heart is found accelerated and a characteristic noise of fluid in the pericardium is heard which justifies a diagnosis of traumatic pericarditis. As the cow is nearly the end of her pregnancy the writer decides to wait a while rather than to send her to the butcher. He with her fore legs apart, grunting with pain and coughing. She lays down, eats well and on auscultation on the left side, a swelling is observed. It is elongated and measures several centimeters in length. Two days later, the cow gives birth to a well-developed calf. The swelling then has become fluctuating, an incision is made through it and a piece of wire, curved as a suture needle is extracted. It had made its way through the fifth intercostal space. After this, the cow recuperated and had no further trouble.—(*Ibidem.*)

PURULENT CONJUNCTIVITIS WITH CORNEAL ULCERATION AND STAPHYLOMA [*Dr. Nello Mori*].—This cat was four months old. When two months, she had slight conjunctivitis of both eyes, which was relieved by astringent applications. Now it has returned on the left eye, which seems covered with a white cloud. The eye is kept open and on the nasal angle, the membrana nictitans is protruding. The animal avoids to move his eye as much as he can. There is no wound nor any foreign body. Boric water lotions are prescribed. Two days later the eye is kept closed, and when the eyelids are separated sero-purulent nictitokerato-conjunctivitis is well marked. The treatment consisted in

\*washing with solution of sublimate. After a few days, the disease seems to be checked, but soon an ulceration of the cornea takes place notwithstanding the application of collyrium of atropine and cocaine. This ulceration is soon followed by the formation of a staphyloma which was removed. The after treatment which consisted in antiseptic lotions was quite long and tedious, but finally the animal got well, having only left a pale cicatricial leucoma, which did not seem to interfere with the sight of the animal.—(*La Clinica Vet.*)

STRANGULATED DIAPHRAGMATIC HERNIA IN A MARE [*Dr. Guiseppe Sivieri*].—Racing animal, eighteen years old, was taken sick with colic during one night and found in great suffering in the morning. She was given relief with subcutaneous injections of muriate of morphia and opium preparations left for her if the colic returned. Warm frictions all over the body were also prescribed, with rectal enemas of laudanum. After the effects of this treatment had subsided the symptoms returned, and as the animal had passed no feces, eserine and pilocarpine were administered. Although the effects of these last drugs soon became evident, salivation and perspiration, there were no indications of defecation. But after a short while, following a short period of comparative quietness, a very violent contraction of the abdomen took place, the mare laid down and died.

At post-mortem there was found a piece of intestine in the thoracic cavity, measuring about one and one-half meter and having entered by a small chronic ring large enough to permit one finger to pass through and was situated in the phrenic portion of the diaphragm. In gathering the history of the case the author had failed in obtaining the information that the animal had assumed the dog's sitting position, and on that account had not suspected the possibility of the condition found at the autopsy.—(*Il. Nuovo Ercol.*)

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## BELGIAN REVIEW.

BY PROF. A. LIAUTARD, M.D., V.M.

INTESTINAL SCLEROSTOMIASIS OF HORSES [*Prof. Lineaux*].—Several varieties of parasitic enteritis are met with in horses. The most frequent and the mildest is that due to ascarides. An-

other form more rare is due to *Taenias*. The third, less known is caused by common nematods, of the sclerostoma kind: specie *Bidentatum* and *Edentatum*.

Sclerostoma live in the large intestines, cæcum and large colon, attached to the mucous membrane. Their eggs are thrown off by feces and hatched on the damp ground. The larvae remain therefor a long time, are picked up by horses with the grass they eat and they migrate toward the mesenteric arteries in which they give rise to aneurisms, the starting point of the colics known as the thrombo-embolics. When these do not occur, the presence of the parasites remains ordinarily unknown, but when they are numerous in colts, they give rise to serious and even fatal troubles. The disease, common all summer, has also been observed in the fall of the year. It exists in the best kept fields, rich in nitrogenous phosphatic manure. Two symptoms are prevailing, loss of flesh and diarrhea and toward the end of the disease are added oedematous swellings under the sternum and the abdomen. If death does not take place, there remains a chronic diarrhea, continued and intermittent. The diagnosis is easy. The worms can be detected in the feces or with the microscope their eggs. In making post mortem, the large intestines are seen bosselated, on their cut surface. The lymphatic glands are hypertrophied. The mucous membrane is thicker and has numerous small circular holes; points of implantation of the adult sclerostomas.

The preventive treatment consists in moving away from the contaminated fields and freely using sulfate of iron in them.

The curative consists in: against the worms arsenious acid during three days, cooked food, intestinal antiseptics, and against the general anemia, bitter tonics.—(*Annal. de Brux.*)

**FRACTURE OF THE NECK OF THE FEMUR** [*Profs. Lienaux and Zwanenpoete*].—This is frequent in colts, specially in those of Belgian breed. The lameness may appear in an insidious way, slight at the beginning, gradually or suddenly increasing and again appearing very severe from the start. In walking the animal takes a longer step than with the sound leg and this is considered by the writers as a sufficient pathognomonic symptom. The diseased leg moves all of one piece, with very limited flexion. At rest the croup is asymmetrical. The coxo-femoral angle is more projecting or stands higher on the side of the lameness, as can be detected with the eye or in feeling comparatively with

both hands. The muscles soon become atrophied. There is also a drooping of the muscular mass in front of the point on the diseased side. Crepitation may also be heard while the animal is walking or when sudden lateral movement of the stifle is made. In numerous of these cases if displacement is great, the union of the fracture cannot be looked for unless the animal is very young and the bones are kept pretty well in contact.—(*Annal. de Bruxel.*)

CALCAREOUS PLATES IN A PIG'S STOMACH [*Mr. Geudens*].—Post-mortem surprise found in an overfed animal. After washing the stomach it was found having its middle part much thickened by a plate of calcareous substance adhering to the mucous membrane and measuring fifteen centimeters in length and four and one-half in width. This plate was very rough on one side and covered with many small cavities. It was very hard and adhering quite intimately to the mucus.—(*Bullet. de Med. Vet. Prat. Malines.*)

TWO CASES OF FRACTURE OF THE FIRST PASTERNS FOLLOWED BY RECOVERY [*Mr. Verlinde*].—The first was in a horse owned by the writer, who found him one morning very lame on the right hind leg. Careful examination revealed a fracture of the first pastern, transversal, and involving the middle of the bone and running a little obliquely from up to downwards and from inwards out. The bone seemed to be fractured in at least three pieces and the articulation of the fetlock and of the os coronet seemed not involved in the injury. After consideration of the case, Mr. Verlinde decided to undertake the treatment. A plaster dressing was applied with six plastered rollers starting from the heels of the shoe upwards to above the fetlock. No other splint was used. The animal was left loose in a box stall. He ate well, and the temperature was 38.7° C. As he seemed afraid to lay down and the other hind leg began to swell he was cast on the second and third days. After that he used to lay down himself and remain quiet. After some time he began to rest his foot on the ground but yet appeared quite sore in putting weight on it. In four weeks the bandage was taken off. Firing was applied on the callus but did not seem to do good. Firing was resorted to and the animal turned out to grass. In two months he was able to resume work without showing any lameness.

The second case occurred in a mare in her seventh month of pregnancy. She was taking walking exercise and became sud-

denly lame on the right hind leg. On account of the want of any marked manifestations, except the lameness and some pain round the coronet, sprain of that region was diagnosed and appropriate treatment prescribed. While the mare seemed to improve at first, ten days later the lameness had returned much more severe and yet the mare showed nothing abnormal, no crepitation, and only a little oedema of the first pastern. Fracture, possibly longitudinal or subperiosteal, was suspected and plaster dressing applied as in the first case. The mare did well, as after nearly one month the lameness seemed about gone, the dressing was taken off. The callus was well formed. The soreness gradually diminished and finally disappeared. During the time the mare was laid up she gave birth to a fine colt.—(*Ibidem.*)

PRIMITIVE SPASMODIC STENOSIS OF THE OESOPHAGUS IN A HORSE [*Mr. H. R. Bredo*].—A brewery horse, four years old, is reported to the author as vomiting. The animal, which is said to be vicious, has been left in the stable that morning. He ate his breakfast and has been well up to dinner time. At first glance, he presents nothing abnormal, except that his nostrils are soiled with masticated food. Oats are offered to him, he chews them but immediately after swallowing a mouthful a convulsive contraction of regurgitation takes place and vomiting-like food is rejected through the nose. The oesophagus gives the sensation of a hard cord. The temperature and pulse are normal. Drinks are offered, taken and rejected also. Oesophagism is diagnosed, which was brought about by nervous surexcitation or fear. A hypodermic injection of morphia is made. After a few hours the animal swallows without any trouble.—(*Ibidem.*)

DR. MIHRAN K. KASSABIAN, an acknowledged authority on the subject of X-rays, not only as a writer, but also as an inventor and experimenter, died at the Jefferson Hospital, Philadelphia, July 12, 1910, a victim of his experiments. Dr. Kassabian had experimented with X-rays for a great many years, and it was not until 1902 that he received any injury from them. At that time he burned his finger nails, and although under competent treatment at the time and at different periods since, he finally succumbed to the injury, which seemed to turn to a cancer-like affliction and steadily progressed despite every effort to check it. The doctor was a member of the Philadelphia County Medical Society, the Roentgen Society and the Medical Club of Philadelphia. He is survived by a widow and three brothers. The latter are jewelers in Smyrna.



## SOCIETY MEETINGS.

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### FORTY-SEVENTH ANNUAL MEETING AMERICAN VETERINARY MEDICAL ASSOCIATION.

PALACE HOTEL, SAN FRANCISCO, CALIFORNIA, SEPTEMBER 6, 7,  
8 AND 9, 1910.

#### OFFICERS, 1909-1910.

President—A. D. Melvin, Washington, D. C.

Vice-Presidents—E. A. A. Grange, Toronto, Can.; J. H. McNeil, Columbus, Ohio; G. H. Glover, Fort Collins, Col.; James Robertson, Chicago, Ill.; A. T. Kinsley, Kansas City, Mo.

Secretary—R. P. Lyman, Hartford, Conn.

Treasurer—G. R. White, Nashville, Tenn.

Librarian—W. L. Williams, Ithaca, N. Y.

#### REGULAR COMMITTEES, 1909-1910.

*Executive*—Joseph Hughes (chairman), Tait Butler, J. R. Mitchell, John R. Mohler, R. A. Archibald.

*Intelligence and Education*—David S. White (chairman), S. J. J. Harger, S. B. Nelson, W. H. Dalrymple, Pierre A. Fish.

*Diseases*—V. A. Moore (chairman), John R. Mohler, E. C. Schroeder, M. H. Reynolds, J. G. Rutherford.

*Legislation*—J. P. Turner (chairman), W. G. Hollingworth, T. Earle Budd, A. S. Cooley, D. E. Buckingham.

*Finance*—Otto G. Noack (chairman), G. Ed. Leech, R. C. Moore.

*Publication*—C. J. Marshall (chairman), R. W. Ellis, C. H. Stange, C. A. Cary, R. P. Lyman.

*Necrology*—Charles G. Lamb (chairman), William Dougherty, J. F. Winchester, George H. Berns, J. L. Robertson.

*Resolutions*—A. H. Baker (chairman), John V. Newton, C. H. Jewell, George H. Roberts, F. Torrance.

*Local Committee of Arrangements*—R. A. Archibald (chairman), David F. Fox, S. B. Nelson, W. E. D. Morrison, P. H. Browning, Charles Keane, George H. Glover, J. C. Norton, M. E. Knowles.

#### SPECIAL COMMITTEES, 1909-1910.

*Association of Faculties*—S. Stewart (chairman), F. A. Schoenleber, A. M. Farrington.

*Association Seal*—E. L. Quitman (chairman), Seymour Hadwen, Harry D. Gill.

*Committee on Revision of Constitution and By-Laws*—Richard P. Lyman (chairman), W. H. Dalrymple, S. B. Nelson, Winfred B. Mack, W. L. Williams.

*Committee on Insular Possessions*—Clarence Loveberry (chairman), N. S. Mayo, G. A. Hanvey, Jr., William Thompson, T. A. Allen.

*International Commission for the Study of Methods of Control of Bovine Tuberculosis*—J. G. Rutherford (chairman), Veranus A. Moore, W. C. Edwards, E. C. Schroeder, C. A. Hodgetts, W. D. Hoard, John R. Mohler, Frederick Torrance, J. W. Flavelle, M. H. Reynolds, Mazyck P. Ravenel, J. W. Tomlinson, Joseph M. Cudahy, John R. Hurty.

#### RESIDENT SECRETARIES, 1909-1910.

##### *United States.*

Alabama—I. S. McAdory, Auburn.

Arizona—J. C. Norton, Phoenix.

Arkansas—R. R. Dinwiddie, Fayetteville.

California—P. H. Browning, San Jose.

Colorado—Walter E. Howe, Denver.

Connecticut—G. W. Loveland, Torrington.

Delaware—H. B. McDowel, Middleton.

District of Columbia—B. T. Woodward, Washington.

Florida—T. J. Mahaffy, Jacksonville.

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Georgia—W. A. Scott, Columbus.  
Hawaii—V. A. Norgard, Honolulu.  
Idaho—George E. Noble, Boise.  
Illinois—L. A. Merillat, Chicago.  
Indiana—J. W. Klotz, Noblesville.  
Iowa—R. R. Hammond, Cherokee.  
Kansas—Richard F. Eagle, Kansas City.  
Kentucky—F. T. Eisenman, Louisville.  
Louisiana—J. Arthur Goodwin, New Iberia.  
Maine—A. Joly, Waterville.  
Maryland—F. H. Mackie, Baltimore.  
Massachusetts—B. D. Pierce, Springfield.  
Michigan—H. M. Gohn, St. Johns.  
Minnesota—M. F. K. Leffingwell, Austin.  
Mississippi—W. R. Edwards, Vicksburg.  
Missouri—Richard F. Bourne, Kansas City.  
Nebraska—Charles A. McKim, Norfolk.  
Nevada—J. Otis Jacobs, Reno.  
New Hampshire—F. S. Allen, Nashua.  
New Jersey—J. Payne Lowe, Passaic.  
New Mexico—F. H. Schneider, Albuquerque.  
New York—William H. Kelly, Albany.  
North Carolina—Adam Fisher, Charlotte.  
North Dakota—T. D. Hinebach, Tower City.  
Ohio—G. W. Cliffe, Upper Sandusky.  
Oklahoma—Robert A. Phillips, Oklahoma City.  
Oregon—W. Dean Wright, Albany.  
Pennsylvania—Thomas Castor, Philadelphia.  
Philippine Islands—G. E. Nesom, Manila.  
Porto Rico—T. A. Allen, San Juan.  
Rhode Island—Thomas E. Robinson, Westerly.  
South Carolina—Louis Friedheim, Rock Hill.  
South Dakota—J. P. Foster, Huron.  
Tennessee—Joseph Plaskett, Nashville.  
Texas—W. A. Knight, Houston.  
Utah—John Ernst, Jr., Salt Lake City.  
Vermont—F. A. Rich, Burlington.  
Virginia—Roy R. Clark, Hampton.  
Washington—Logan B. Huff, Spokane.  
West Virginia—L. N. Reefer, Wheeling.  
Wisconsin—W. G. Clark, Marinette.  
Wyoming—Otto L. Prien, Laramie.

*Canada.*

Alberta—J. C. Hargrave, Medicine Hat.  
British Columbia—S. F. Tolmie, Victoria.  
Manitoba—F. Torrance, Winnipeg.  
New Brunswick—D. McCuaig, McAdam Junction.  
Nova Scotia—W. H. Pethick, Antigonish.  
Ontario—T. Thacker, Renfrew.  
Quebec—M. C. Baker, Montreal.  
Saskatchewan—J. F. Burnett, Regina.

*Other Countries.*

South Australia—J. Desmond, Adelaide.  
Uruguay—D. E. Salmon, Montevideo.

## DELEGATES FROM VETERINARY ORGANIZATIONS.

Alumni Association of the Veterinary Department of New York University—Dr. L. L. Glynn, Monte Vista, Colorado.

Bureau of Animal Industry Inspectors' Association—Dr. D. D. Tierney, Chicago, Illinois.

California State Veterinary Medical Association—Drs. H. A. Spencer, H. H. Hicks, Charles Keane, C. M. Haring and R. A. Archibald.

Chicago Veterinary Society—Drs. A. H. Baker, James Robertson, Joseph Hughes, C. A. White, E. L. Quitman, H. F. Palmer, Albert C. Worms and William Kaiser.

Georgia State Veterinary Association—Dr. L. J. Herring, Experiment; Dr. Peter F. Bahnsen, Americus; Dr. H. G. Carnes, Atlanta.

Keystone Veterinary Medical Association—Drs. Harry B. Cox, Frederick H. Schneider and Thomas Kelly, Philadelphia.

Maine Veterinary Medical Association—Delegates to be announced.

Michigan State Veterinary Medical Association—Dr. Theo. F. Krey, Detroit.

Minnesota State Veterinary Medical Association—Dr. W. Amos, Owatonna, and Dr. M. M. Fulton, Moorhead.

Missouri Valley Veterinary Association—Dr. W. R. O'Neil, Wayne, and Dr. Paul Juckiness, Lincoln, Neb.

New York State Veterinary Medical Society—Dr. W. G. Hollingworth, Utica; Dr. George H. Berns, Brooklyn, and Dr. J. F. DeVine, Goshen.

North Dakota Veterinary Medical Association—Dr. J. W. Dunham, Fargo; Dr. S. P. Smith, Cando, and Dr. J. F. Sylvester Langdon.

Schuykill Valley Veterinary Medical Association—Dr. D. R. Kohler, Boyertown; Dr. E. D. Longacre, Shenandoah, and Dr. S. F. Griesemer, Bernville.

Southern Auxiliary of the Veterinary Medical Association of California—Delegates to be announced.

Texas Veterinary Medical Association—Dr. E. R. Forbes, Fort Worth, and Dr. Hugh Maxwell, Amarillo.

Wisconsin Society of Veterinary Graduates—Dr. D. B. Clark, Janesville, and Dr. T. H. Ferguson, Lake Geneva.

#### OFFICIAL REPRESENTATIVES OF THE UNITED STATES ARMY.

Dr. Alexander Plummer, Fourth Cavalry, Fort Riley Kan.  
Dr. Andrew E. Donovan, Sixth Field Artillery.

#### HEADQUARTERS AND HOTEL ARRANGEMENTS.

The headquarters of the Association during convention week will be at the Palace Hotel, corner of Market and New Montgomery streets. This hotel is in the centre of the business district of the city, within a few minutes' ride or walk of all railroad and ferry depots.

The Palace Hotel offers the following rates: Rooms for one person, with bath, \$2.50 per day. For two persons in a room, with bath, \$4.00 per day. European plan.

The Hotel St. Francis, corner Geary and Powell streets, situated near the headquarters, offers rooms for one person, without bath, \$2.00 per day; with bath, \$2.50 per day. For two persons, without bath, \$3.50 per day; with bath, \$4.00 per day. Rooms with bath, two beds, \$6.00 per day. European plan.

Hotel Stewart, Geary street, near Powell street, within a short walk from headquarters, offers rooms for one person, without bath, \$1.50 per day; with bath, \$2.00 per day. Rooms for two persons, without bath, \$3.00 per day; with bath, \$3.50 per day. European plan.



Grand Central Hotel, corner of Market and Tenth streets, offers rooms for one person, without bath, \$1.00 per day; with bath, \$1.50 per day. Two persons, without bath, \$1.50 per day; with bath, \$2.00 per day. Two connecting rooms with bath for two or three persons, \$2.50 per day. This hotel is but a short distance from headquarters and on the European plan.

Hotel Argonaut, Fourth street, near Market street, offers rooms with detached bath at \$1.00 per day. Rooms with private bath, \$1.50 and up per day. European plan.

Cadillac Hotel, corner Eddy and Leavenworth streets, offers the following rates: Single rooms, without bath, \$2.50 per day; a bath attached, \$3.00 per day. American plan. Rooms without bath, \$1.00 per day; with bath, \$1.50 per day. European plan.

There are many other hotels located within a block or two of the headquarters. Reservations should be made early by those who contemplate attending the meeting, as other conventions are to be held in San Francisco during the same week, and the city will undoubtedly be crowded with visitors. Those wishing to reserve rooms may communicate with R. A. Archibald, Chairman of the Local Committee on Arrangements, 1724 Webster street, Oakland, California. When writing state the kind of reservation desired, or, indeed, ask for any other information pertaining to accommodations or hotel arrangements.

*Restaurants*—San Francisco has a world wide reputation for the number and excellence of its restaurants. Many of these with fine service and cuisine, are located within four or five blocks of the headquarters.

#### PLACE OF MEETINGS.

The meetings will be held daily beginning at 10.00 A. M., Tuesday, September 6th, in the ball room of the Palace Hotel. This hall is located on the ground floor of the Jessie street side of the hotel.

#### PRELIMINARY MEETINGS.

*Monday, September 5, 1910.*

10.00 A. M. Executive Committee. In room 2015 at Palace Hotel, especially provided for the conferences and located upon the second floor.

11 A. M. Local Committee on Arrangements will have room 2017 on the second floor.

2.00 P. M. Association of College Faculties will meet in a reception room on the ground floor on the Jessie street side, Palace Hotel.

2.00 P. M. Association of Examining Boards will meet in a reception room on the ground floor, Jessie street side.

4.00 P. M. Joint meeting of the College Faculties and Examining Boards, Palace Hotel.

8.00 P. M. Meetings of regular and special committees, Palace Hotel.

#### CONVENTION PROGRAM.

*First Day, Tuesday, September 6, 1910.*

8.00 A. M. Meeting of the Executive Committee, conference room, second floor, Palace Hotel.

10.00 A. M. Convention opened by President A. D. Melvin.  
Address of Welcome, Hon. J. H. McCarthy,  
Mayor, San Francisco, Cal.

Response to Address of Welcome, Dr. J. G. Rutherford,  
Veterinary Director General, Ottawa,  
Canada.

President's Address.

Welcome to delegates from other veterinary organizations,  
Dr. David F. Fox, Sacramento,  
California.

Roll Call.

Submission of the minutes of the previous meeting  
as presented in the annual report and records  
as kept by the secretary.

Unfinished business.

12.00 M. Adjournment for luncheon.

2.00 P. M. Association reassembles.  
Report of the Executive Committee.  
Admission of new members.

Report of Committee on Intelligence and Education, embodying:

- (a) "Matters Concerning State Examining Boards and Existing State Laws Governing the Practice of Veterinary Medicine," Dr. David S. White, chairman, Columbus, O.
- (b) "Recent Veterinary Literature, Especially that Available to English-Speaking Veterinarians," Dr. P. A. Fish, Ithaca, N. Y.
- (c) "Recent Advances Made in the Use of Therapeutic Sera and Immunizing Agents in Veterinary Medical Practice," Dr. W. H. Dalrymple, Baton Rouge, La.
- (d) "Recent Advances Made in Surgical Procedure in Veterinary Practice," Dr. S. J. J. Harger, Philadelphia, Pa.
- (e) "The Number of Semesters Which Should Constitute a College Course in Veterinary Medicine," Dr. S. B. Nelson, Spokane, Wash.

PAPERS AND DISCUSSIONS.

1. "Veterinary Jurisprudence," Dr. Otto G. Noack, Reading, Pa.

2. "Uniformity in Degrees and Matriculation Requirements for Veterinary Colleges," Dr. George H. Glover, Fort Collins, Colo.

4.00 P. M. Election of Officers.

5.00 P. M. Adjournment.

8.00 P. M. Reception in the ball room, Palace Hotel; all members, visitors, delegates, their ladies and friends are invited.

*Second Day, Wednesday, September 7, 1910.*

8.00 A. M. Executive Committee meeting.

10.00 A. M. Association reassembles.

Report of Executive Committee.

## Tuberculosis Session, including:

- (a) Report of Committee on Diseases, The Methods Employed in Europe to Control Bovine Tuberculosis, Dr. V. A. Moore, Chairman, Ithaca, N. Y.
- (b) The Open Air Experiment with Tuberculous Cattle, Dr. J. G. Rutherford, Ottawa, Canada.
- (c) Immunization of Cattle Against Tuberculosis, Drs. J. R. Mohler and E. C. Schroeder, Washington, D. C.
- (d) Legislation on Bovine Tuberculosis, Dr. M. H. Reynolds, St. Paul, Minn.

## PAPERS AND DISCUSSIONS.

3. "Artificial Immunization of Cattle Against Tuberculosis," Dr. S. H. Gilliland, Marietta and Dr. E. S. Deubler, Media, Pa.

4. "Bovine Tuberculosis Investigations at the University of California Farm," Dr. C. M. Haring, Berkeley, California.

Report of Committee on Legislation.

Report of Committee on Finance.

Report of Committee on Publication.

Report of Committee on Local Arrangements.

Report of Committee on Necrology.

Report of Committee on Resolutions.

12.00 M. Adjournment for luncheon.

1.30 P. M. Association re-assembles.

Report of Special Committees:

Committee on Association Seal.

Committee on Revision of the Constitution and By-Laws.

Committee on Association of College Faculties.

Committee on Insular Possessions.

Report of Secretary Lyman.

Report of Treasurer White.

Discussion of Reports.

Recess.

2.00 P. M. Convention, divided into two sections, reconvenes to carry out the following program:

## SECTION I.—MEDICAL DIVISION.

## Papers and Discussions.

5. "The Application of Medicinal Agents to Disease," Dr. F. F. Brown, Kansas City, Mo.
6. "Nuclein," Dr. Herbert F. Palmer, Chicago, Ill.
7. "John's Disease," Dr. D. B. Clark, Madison, Wis.
8. "Bursattee," Dr. L. Roadhouse, Berkeley, California.
9. "Acute Indigestion in the Horse," Dr. John R. Mitchell, Evansville, Ind.
10. "Dourine," Dr. J. P. Foster, Huron, S. D.
11. "A Nation's Loss a Profession's Tribute to Fallen Leaders," Dr. W. Horace Hoskins, Philadelphia, Pa.

## SECTION II.—PATHOLOGICAL DIVISION.

## Papers and Discussions.

12. "Parasitological Investigation and Instruction in Semi-tropical Regions," Prof. W. B. Herms, University of California.
13. "Anthrax in Swine," Mazyck P. Ravenel, M.D., Madison, Wis.
14. "The Diagnosis of Glanders by Konew's Precipitation Reaction," Dr. John R. Mohler, Washington, D. C.
15. "Pseudoleukemia in the Bovine," Dr. C. H. Stange and Dr. W. W. Dimock, Ames, Ia.
16. "Serum Immunization Against Swine Diseases," Dr. J. W. Connaway, Columbia, Mo.
17. "Some Conditions Which Affect Phagocytosis," Dr. B. F. Kaupp, Fort Collins, Colo.
18. "Report of an Outbreak of Hemorrhagic Septicemia in Sheep," Dr. S. H. Ward and Dr. W. L. Beebe, St. Paul, Minn.
- 5.00 P. M. Adjournment.
- 8.00 P. M. Association re-assembles. Milk and Milk Hygiene Session.

## PAPERS AND DISCUSSIONS.

19. "The Practicability of Securing Wholesome Dairy Products," Dr. S. B. Nelson, Spokane, Wash.
20. "The Necessity of Proper Transportation in the Production of a Sanitary Milk Supply," C. A. Dukes, M.D., President Oakland Board of Health.
21. "The Duty of the Veterinarian to the Milk Producer," Dr. Charles Keane, Sacramento, Cal.

22. "Stereopticon Views of Dairy Conditions in California,"  
W. F. Snow, M.D., Secretary State Board of Health.

10.00 P. M. Adjournment.

*Third Day, Thursday, September 8, 1910.*

8.00 A. M. Executive Committee meeting.

10.00 A. M. Association reassembles. Surgical Session.  
Unfinished business.

PAPERS AND DISCUSSIONS.

23. "An Address on the Present Status of Animal Surgery  
in America," Dr. L. A. Merillat, Chicago, Ill.

24. "The Surgical Restraint of Animals," D. G. R. White,  
Nashville, Tenn.

25. "Anæsthetics," Dr. R. T. Whittlesey, Los Angeles, Cal.

26. "Hypodermic Anæsthesia in Domestic Animals," Dr. E.  
L. Quitman, Chicago, Ill.

27. "The Evolution of Antisepsis from a Surgical Stand-  
point," Dr. Otis A. Longley, Fresno, California.

28. "An Address on Veterinary Dentistry," Dr. James Rob-  
ertson, Chicago, Ill.

29. "Lameness of Horses," Dr. Joseph Hughes, Chicago, Ill.

30. "Modern Obstetrics in Animals," Dr. J. H. Blattenberg,  
Lima, Ohio.

31. "Surgical Variations in California," Dr. F. H. McNair,  
Berkeley, Cal.

32. "Stringhalt, Its Causes and Cure," Dr. C. C. Lyford,  
Minneapolis, Minn.

12.00 M. Adjournment for luncheon.

2.00 P. M. Association reassembles.

Unfinished business.

Report from the Executive Committee.

Papers and Discussions.

Installation of newly elected officers.

Adjournment.

*Fourth Day, Friday, September 9, 1910.*

Annual Clinic Day.

9.00 A. M. Clinic will take place at Dr. William F. Egan's  
branch hospital, 3250 Webster street, corner of  
Chestnut street.



To reach the clinic building, take the Sutter street cars, going west, transfer to the Fillmore cars going north, get off at Lombard street and walk one block to the east.

1.00 P. M. An open air luncheon will be served in a park adjacent to the building in which the clinic will take place.

2.00 P. M. Clinic continued. The clinic will be under the direction of Dr. George R. White, Nashville, Tenn., and will embrace a number of practical and interesting operations, performed by men of national repute; likewise, there will be an array of subjects for diagnosis. Effort will be put forth to secure cases of every-day character for a majority of the operative and clinical subjects.

#### SOCIAL FEATURES.

The Local Committee of Arrangements have arranged an entertainment for the social enjoyment of visitors and friends as well as for recreation to members. The committee will maintain an information bureau at the headquarters, where members and visitors may obtain information regarding the location of hotels, restaurants, clinic, places of amusement, etc.

The following has been outlined to occupy the days of convention week:

*Tuesday, September 6.*—10.00 A. M., opening exercises of the convention, ball room of the Palace Hotel, Jessie street side; visitors and friends are cordially invited. 1.30 P. M., ladies and friends of delegates and members will be given an automobile trip through the resident and business portion of San Francisco, going among other places through Golden Gate Park, along Ocean Boulevard, to the Cliff House and Seal Rocks, Sutro Gardens and Presidio. 8.00 P. M., a reception will be tendered in the ball room of the Palace Hotel; all members, visiting veterinarians, delegates, their ladies and friends are cordially invited.

*Wednesday, September 7.*—9.30 A. M., assembling at the Palace Hotel; the ladies will be escorted on a trip to Mount Tamalpais and Big Tree National Park; luncheon will be served on the mountain or in the park. 8.00 P. M., a trip through Chinatown.

*Thursday, September 8.*—9.40 A. M., Transbay trip, taking in San Francisco Bay, Yerba Buena, United States Naval Training

Station, Oakland, Berkeley, University of California, Greek Theatre, Piedmont Gardens, Piedmont Springs, Great Art Gallery, Ostrich Farm and other attractions; luncheon will be served at Piedmont Springs; 7.00 P. M., annual banquet in the "Gold Room," Palace Hotel. All are cordially invited.

*Friday, September 9.*—10.00 A. M., the ladies will assemble in the parlors of the Palace Hotel and from there will be escorted to a suitable location to witness the parade of the "Native Sons and Daughters of the Golden West"; 1.00 P. M., an open air luncheon will be served on a park overlooking the Golden Gate and adjacent to the building in which the annual clinic will be conducted. All are invited.

#### TRANSPORTATION NOTES.

*Veterinary Special.*—Parties planning to attend the meeting and starting from points readily accessible to Chicago are advised that special cars (as fine a special train as can be put in service if 100 passengers are secured out of Chicago) have been arranged to run on the following schedule: Leave Chicago, Burlington route, Tuesday, August 30, 6.15 P. M. (later if a special train). Arrive at St. Paul, Wednesday, August 31st, 7.05 A. M.; leave 9.00 A. M. Arrive at Spokane, via Northern Pacific, Friday, September 2, 7.30 A. M.; leave Spokane 4.15 P. M. Arrive at Seattle Saturday, September 3d, 8.20 A. M.; leave 4.00 P. M. Arrive at Portland Saturday, September 3d, 10.30 P. M.; leave Sunday, September 4th, 1.00 A. M. Arrive at San Francisco, Monday, September 5th, 11.59 A. M. The features of this beautiful and pleasurable trip have previously been detailed in the various veterinary publications. The profession of the Northern Pacific Coast have prepared a series of enjoyable side trips and entertainments, and the route itself probably embraces the greatest variety of scenery of any of the transcontinental trip.

*Rates.*—From Chicago, via. Portland (the route of the special) and return over any other direct route, tickets good until October 31st, with stop-over privileges, \$77.50; Pullman going \$17.50, return \$14.00. From Chicago going and return via any direct route, \$62.50 (not via the special or by Pullman); Pullman, \$14.00 each way.

The Trunk Line Passenger Association offers especially attractive rates, available from New England to Washington. Sale of tickets begins August 29th. Examples: From New York to Chicago, joining the special and returning from California to the

starting point over any other direct route, \$108.00 to \$112.50; Boston, \$107.75 to \$114.50; Philadelphia, \$108.00 to \$110.25; Buffalo, \$93.25 to \$95.50; Pittsburg, \$91.00 to \$93.25; Cincinnati, \$84.40; Cleveland, \$87.65 to \$87.75; Washington, \$108.00. The slight variation according to route between starting point and Chicago. Parties planning to join the special at Chicago or en route (having gone ahead to visit Yellowstone Park) will do well to inform Secretary Lyman, P. O. Box 901, Hartford, Conn.

From starting points west or southwest of Chicago attractive reduced rates as follows: Sioux City, \$53.90 to \$68.00; Omaha, \$50.00 to \$65.00; Kansas City, \$50.00 to \$71.75; St. Paul, \$63.00 to \$65.00; Duluth, \$65.00 to \$69.50; Superior, \$65.00 to \$69.30; Port Arthur, Ontario, \$60.00; Victoria, B. C., \$35.00; Peoria, \$59.25 to \$74.25; St. Louis, \$57.50 to \$72.50; Memphis, Tenn., and New Orleans, La., \$57.50 to \$77.50; Fort Worth, Dallas, Houston or San Antonio, Tex., \$50.00 to \$70.00; Cheyenne, Wyo., Denver, Colorado Springs and Pueblo, Cold., \$45.00 to \$60.00; Albuquerque, N. M., \$40.00 to \$62.50; Ogden, Utah, \$30.00 to \$40.00; Salt Lake City, \$31.50 to \$40.00. The higher figure includes one way via Portland, Oregon.

*Exchanges.*—The sale of tickets is so regulated, whatever the route, as to require presentation of exchange orders at Chicago, St. Louis or other exchange points not later than the day following the last date of special sale, viz.: For the occasion of the A. V. M. A. meeting the dates of sale are from August 29th to September 6th inclusive.

*Side Trips.*—Stop-overs will be allowed on whatever going or return route is selected if it does not exceed the final return limit, October 31st. This facilitates making side trips with but slight additional cost, and gives opportunity to visit the Grand Canyon, Phoenix, Colorado Springs, Cripple Creek, Yellowstone National Park or some of the many other interesting points west of Chicago, St. Louis, Memphis, New Orleans or Port Arthur.

*Validation.*—Tickets will be good for return only when validated by the joint agent at San Francisco, and this not exceeding three days in advance of leaving San Francisco.

*Note.*—When purchasing your ticket mention that it is for the occasion of the special sale, August 29th to September 6th, and inquire of the local agent concerning place of exchange if you are not routed via Chicago or St. Louis. Do this and you will save money.

RICHARD P. LYMAN, Secretary.

## THE SIXTEENTH ANNUAL MEETING OF THE MISSOURI VALLEY VETERINARY ASSOCIATION.

Another successful meeting of the Missouri Valley Veterinary Association has come and gone; 112 veterinarians in attendance registered at the door and 101 names were added to the membership roll, from Colorado, Missouri, Nebraska, Kansas, Iowa, Illinois, Texas, California, South Dakota, Wyoming, Oklahoma, New Mexico, Indiana, Montana, Kentucky and Minnesota.

The meeting was called to order in the assembly room, City Hall, Omaha, Neb., at 9 a. m., July 6th, by the president, Dr. A. T. Kinsley.

The roll call was dispensed with and registration taken at the door.

The minutes of the previous meeting were approved as printed in the Missouri Valley Bulletin.

Under the head of correspondence the secretary read the petition for resignation of Drs. Robert Dill and C. O. Netherton. The resignations were accepted. A letter was also read from Dr. A. D. Melvin, chief of the Bureau of Animal Industry, in which he stated many substantial reasons why that bureau or any part of same should not be made a subsidiary part of the proposed Department of Health. He also stated that it was gratifying to see the aid veterinarians all over the United States were giving in an effort to preserve the efficiency of the bureau and prevent any bill from passing that would take the Bureau of Animal Industry from the Department of Agriculture.

The subject of the proposed revision of the constitution and by-laws, as presented at the semi-annual meeting, was taken up for action. Article IX. was accepted as presented, which reads as follows:

### FEES OF OFFICERS.

ART. IX.—All offices in this association except that of Secretary-Treasurer, under the constitution and by-laws thereof, are hereby declared to be offices of trust and honor to which no fee or emolument is attached, but other offices of emolument may be created.

Article X. was revised and adopted as follows:

ART. X.—The Secretary-Treasurer shall receive fifty dollars (\$50) per annum and actual expenses in attending the meetings of the association.

Dr. S. Stewart moved that the board of censors and the officers of the association shall constitute an executive committee and all new business that shall come before the association shall go through this committee. Seconded by Dr. H. C. Simpson and carried. This committee will meet on the evening before the association convenes and will request that any matters to come before the association shall be in the hands of the secretary of the association before that time.

The subject of the feasibility of issuing a certificate of membership to all whose dues are paid up in advance, was brought up and discussed. It was moved, seconded and carried that a committee of three be appointed to draft an article providing for a certificate of membership.

The Secretary-Treasurer's report showed \$109.53 in the treasury. This did not include the receipts of this meeting and included the payment of all expenses, except that of janitor, for the present meeting. Moved, seconded and carried that the report be accepted.

Dr. D. M. Campbell announced his retirement as editor of the Missouri Valley Veterinary Bulletin, and also of his intention of publishing a veterinary journal under the name of the American Journal of Veterinary Medicine. He offered to make this publication the official organ of the association, but this offer was declined by the members of the association present. No step was taken at this meeting for the continuance of the Missouri Valley Veterinary Bulletin.

Dr. C. E. Stewart moved that a vote of thanks be extended to the local committee for their excellent arrangements and entertainment. Seconded and carried.

The President's annual address by Dr. A. T. Kinsley was given in the forenoon of the first day following the business session.

The chairman of the committee on therapeutics, Dr. H. Jensen, gave his paper on "Reports of Newer Therapeutic Agents." This brought out quite a discussion by the members present.

The committee on surgery, of which Dr. J. S. Anderson is chairman, did not make a report. The meeting adjourned to luncheon at 12.30 and assembled at 1.30 p. m. to observe and study a pathological exhibit at Armour's packing plant, South Omaha, Neb. This consisted of fresh pathological specimens from cattle, calves, hogs and sheep, collected by the veterinary



inspector of the local Bureau of Animal Industry under the direction of the inspector in charge.

The pathological specimens were numbered. Cards were furnished each member on which could be written the description and diagnosis. Sixty-four exhibits were presented.

The annual banquet was held at the Paxton at 7.30. Sixty were present. Papers were presented and discussed (instead of the usual toasts). The first paper presented was a report of the committee on infectious diseases by the chairman of the committee, Dr. Geo. H. Glover. This report was followed by a long discussion, participated in by Drs. S. Stewart, A. T. Peters, H. C. Simpson, P. Juckiness and others.

The report of the committee on meat and milk inspection was made by the chairman of the committee, Dr. D. M. Campbell. The discussion was participated in by Drs. Frank Jellen, W. N. Neil, C. P. Liegerot, and others.

"Infectious Diseases as Encountered in the Philippines," was discussed by Dr. Geo. A. Hanvey, Jr., Sixth U. S. Cavalry.

"Tuberculosis and the Tuberculin Test" was discussed by Dr. P. Juckiness; "Contagious Abortion" was discussed by Dr. A. T. Peters.

"Hog Cholera" was discussed by Dr. H. C. Simpson; the doctor reported that Iowa had appropriated \$8,000 for the manufacture of hog cholera serum and furnished it free to the stock raisers, but it must be administered by a competent veterinarian. He condemned the practice of Oklahoma in giving it out to the farmer to be used by the farmer, who was totally unqualified to administer this kind of vaccine.

The forenoon of July the 7th was devoted to the presentation of papers and discussion of same. The first paper on the program was one on "Castration of Cryptorchids," by Dr. A. W. Whitehouse, of Waldon, Col. "The Life History of Koch" was nicely related by Dr. S. Stewart of Kansas City, Mo. "Open Joints and their Treatment in My Practice" was read by Dr. J. V. LaCroix, and brought out a lengthy discussion.

The papers presented at the afternoon meeting were as follows: "Alfalfa Impaction in the Horse," by Dr. J. W. McGinnis; "Impaction of the Colon," by Dr. I. E. Newson. These two papers were discussed to considerable extent. In the discussion was brought out the fact that some practitioners prefer to induce the ingestion of large quantities of water. This is sometimes done by giving three or four ounces of sodium chloride in capsules.



Others after passing the stomach tube inject into the stomach three to six gallons of warm water. The increased quantity of fluid in the digestive tract favors the softening of the obstructing mass and purgation. Dr. J. P. Jorgenson administers glycerine to aid this process. Dr. S. Wisner presented a case report.

It was moved, seconded and carried that the semi-annual meeting to be held in Kansas City in February be a three day session.

It was moved, seconded and carried that the committees on surgery, infectious diseases, meat and milk inspection and necrology be continued another year.

The committee on Necrology made the following report, which was accepted:

*Whereas*, Dr. L. R. Baker was an active member of this association and has contributed in numerous ways to the progress, and,

*Whereas*, He had been ever solicitous to make our meetings both valuable and pleasurable, and

*Whereas*, We have been deprived of his genial fellowship and professional co-operation by his untimely death on July 3, 1910, be it

*Resolved*, That we record our high appreciation of his splendid manhood and his ever helpful and courteous relations with his professional brethren, and be it further

*Resolved*, That we express our deep sympathy to his bereaved family.

Dr. Jellen then moved the adoption of the following resolution:

*Resolved*, by the Missouri Valley Veterinary Association, in annual convention assembled, that we heartily agree in the furtherance of the purposes for which the international commission on tuberculosis was formed, and watch with interest the progress made by this commission, and be it further

*Resolved*, That we will individually and collectively render every assistance possible to the international commission for the study of tuberculosis, and be it further

*Resolved*, That we believe that this association, representing as it does nearly 600 veterinarians, should have a representative on the commission.

The motion was seconded and carried.

The committee on drafting an amendment to the constitution authorizing the issuance to active members in good standing made the following report:

Chapter II. Art. VIII.—The Secretary-Treasurer shall have prepared and deliver to each member who is in good standing and has paid the cost of issue, a certificate of membership which shall read as follows: (form to be suggested by the committee and adopted by the association).

S. STEWART,  
D. M. CAMPBELL,  
H. C. SIMPSON,  
A. T. PETERS,  
C. E. STEWART.

The following officers were elected for the following year:

Dr. B. F. Kaupp, President.  
Dr. C. A. McKim, First Vice-President.  
Dr. C. E. Stewart, Second Vice-President.  
Dr. Hal C. Simpson, Secretary-Treasurer.  
Dr. R. Ebbitt, Dr. S. H. Johnson, Dr. H. Jensen, Dr. J. V. LaCroix, Dr. H. E. Kingman, Board of Censors.

The president appointed the following delegates to the American Veterinary Medical Association to be held in San Francisco, September 6, 7, 8 and 9, 1910: Dr. W. R. O'Neil, Wayne, Neb.; Dr. P. Juckiness, Lincoln, Neb.

The following committees were appointed by the president-elect for the ensuing year:

*Infectious Diseases*—Dr. Geo. H. Glover, chairman, Ft. Collins, Colo.; Dr. D. F. Luckey, Columbia, Mo.; Dr. P. Juckiness, Lincoln, Neb.; Dr. H. E. Bemis, Ames, Ia.; Dr. L. L. Lewis, Stillwater, Okla.; Dr. O. O. Wolf, Ottawa, Kans.; Dr. A. T. Peters, Springfield, Ill.

*Therapeutics*—Dr. H. Jensen, chairman, Kansas City, Mo.; Dr. J. A. DeCow, Holdredge, Neb.; Dr. H. E. Kingman, Ft. Collins, Colo.; Dr. K. W. Stowder, Manhattan, Kans.; Dr. G. P. Statter, Sioux City, Ia.; Dr. Geo. Jungerman, Morrill, Kans.

*Surgery*—Dr. J. V. LaCroix, chairman, Hiawatha, Kans.; Dr. R. R. Dykstra, Ames, Ia.; Dr. P. Simonson, Lexington, Neb.; Dr. S. I. Folse, Houston, Tex.; Dr. F. F. Brown, Kansas City, Mo.; Dr. G. W. Stickey, Colorado Springs, Colo.

*Food and Milk Inspection*—Dr. D. M. Campbell, Chicago, Ill.; Dr. G. F. Babb, Topeka, Kans., Dairy; Dr. Frank Jellen, Omaha, Neb., Meat; Dr. C. M. McFarland, St. Joseph, Mo., Meat; Dr. C. D. Folse, Marshall, Tex., Food; Dr. C. P. Liegerot, Red Oak, Ia., Dairy.

*Necrology*—Dr. S. Stewart, chairman, Kansas City, Mo.; Dr. V. Schaefer, Tekamah, Neb.; Dr. E. Biart, Leavenworth, Kans.

*Certificate of Membership*—Dr. A. T. Kinsley, chairman, Kansas City, Mo.; Dr. C. E. Stewart, Charlton, Ia.; Dr. W. N. Neil, Omaha, Neb.

B. F. KAUPP, Secretary.

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## RESUME OF THE PROCEEDINGS OF THE KEYSTONE VETERINARY MEDICAL ASSOCIATION, PHILADELPHIA, PA.

The Keystone Veterinary Medical Association has had a year of peculiarly interesting meetings and a regular and appreciative attendance on the part of its members. The membership has been increased by the admission of eleven new members. The subjects presented before the Association are as follows:

Oct. 12, 1909.—“The Mentality of the Horse,” Dr. B. M. Underhill.

Nov. 9, 1909.—1. “Immunization against Canine Distemper,” Dr. D. E. Buckingham. 2. “A Crusade against Tuberculosis and Its Result,” Drs. C. B. Lane and L. A. P. Maynard. 3. “Leucocytes in Milk,” Dr. H. C. Campbell.

Dec. 14, 1909.—1. “The Standardization of Serums,” Dr. A. Parke Hitchens. 2. “Spavin in the Horse,” Dr. J. W. Adams.

Jan. 11, 1910.—1. “Malarial Parasites,” Dr. Wm. Pepper. 2. “The Coccidium and the Coccidiosis,” Dr. Geo. Byron Morse.

Feb. 8, 1910.—1. “The Significance of Chill,” Dr. Allen J. Smith. 2. “White Scours in Calves,” Dr. Henry Marshall.

April 12, 1910.—1. “The Veterinarian as a Conserver of the Interests of the Stockbreeder and Dairyman,” Dr. Carl W. Gay. 2. “Tuberculosis Bacilli in Philadelphia’s Milk Supply,” Dr. H. C. Campbell.

May 10, 1910.—1. \* “Preventive Dose of Tetanus Antitoxin

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\* Published in this issue of the REVIEW.

for the Horse: Its Relation to the American Unit," Dr. A. Parker Hitchens. 2. "Alkaloidal Anæsthesia," Dr. S. J. J. Harger. 3. "Contagious Abortion in Cattle," Dr. E. Mayhew Michener.

June 14, 1910.—1. "The Effect of Smelter Fumes Upon the Livestock Industry in the Northwest," Dr. Robert J. Formad. 2. "Hog Cholera," Dr. E. S. Deubler.

The monthly meeting in March, as on previous occasions, gave place to the annual meeting of the Pennsylvania State Veterinary Medical Association.

On January 18 the Association gave a banquet at the School of Veterinary Medicine in honor of Dr. S. H. Gilliland, then recently appointed State Veterinarian for Pennsylvania, and Dr. Louis A. Klein, who only a few days prior was chosen dean of the School of Veterinary Medicine by the Trustees of the University of Pennsylvania.

At present the Association is studying the best means to adopt to perpetuate the memory of Drs. Rush Shippen Huidekoper and Leonard Pearson, both deceased members of the Association.

It is also making a study of some of the features of the milk supply of Philadelphia and endeavoring to secure the production and administration of anti-rabic vaccine in the city.

S. LOCKETT, Secretary.

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#### ANNUAL MEETING UNITED STATES LIVE STOCK SANITARY ASSOCIATION, CHICAGO, 1910.

The Executive Committee of this Association voted to hold the Fourteenth Annual Meeting in Chicago, December 5, 6, 7, 1910.

These dates follow the International Live Stock Exposition, which it was thought many of our members would attend.

The International Commission on Bovine Tuberculosis will report to the American Veterinary Medical Association at San Francisco, second week of September. Members of this association will have ample time to consider the Report of the Commission before the Chicago meeting.

Federal and state officials, and all persons interested in live stock sanitary work are earnestly requested to identify themselves with this association by forwarding application for membership to the undersigned.

J. J. FERGUSON, Secretary-Treasurer, Chicago.

## NEWS AND ITEMS.

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DR. CHAS. H. HIGGINS, Ottawa, Canada, Biologist of Health of Animals Branch of the Department of Agriculture, Dominion of Canada, was recently honored by being elected a Fellow of the Royal Microscopical Society of England. This recognition by so conservative a body is something to be proud of, and we congratulate Dr. Higgins as the recipient of this honor which he so well deserves.

MR. HENRY PHIPPS, of New York, has selected the University of Pennsylvania to carry on the work of the Phipps Institute, whose object is the study, prevention and treatment of tuberculosis. Mr. Phipps has already acquired ground in Philadelphia on which will be erected a hospital for this purpose. The extent of the benefaction exceeds \$5,000,000.

The report of the Committee appointed to consider the future policy of the Institute has been approved by Mr. Phipps and the trustees of the University.

The work will be divided into three general departments, each of which will be presided over by a director. For the Directorship of the Laboratory, Dr. Paul Lewis, now of the Rockefeller Institute, has been selected. For Directorship of the Sociological Department, Mr. Alexander M. Wilson, of the Boston Association for the Relief and Control of Tuberculosis. Dr. H. R. M. Landis has accepted the appointment as Director of the Clinical Department.

In addition to a board of eight directors who will be directly responsible to the trustees of the University, an Advisory Council has been created and will meet annually at the Institute. The following have accepted the invitation to serve as members of this body: Dr. Samuel G. Dixon, Harrisburg, Pa.; Dr. S. McC. Lindsay, New York City; Dr. William H. Baldwin, Washington, D. C.; Dr. Hermann M. Biggs, New York City; Dr. William H. Welch, Baltimore, Md.; Dr. Theobald Smith, Boston, Mass.; Dr. Gideon Wells, Chicago, Ill.; Dr. Simon Flexner, New York City; Dr. James A. Miller, New York City; Dr. Lawrence Brown, Saranac, N. Y.; Dr. Henry Baird Favell, Chicago, Ill., and Dr. James Pratt, Boston, Mass.







## VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alumni Ass'n, N. Y.-A. V. C.....	.....	141 W. 54th St.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.....	Sept. 6, 7, 8, 9, 10	San Francisco.	R. P. Lyman, Kansas City, Mo.
Arkansas Veterinary Ass'n.....	.....	.....	Horace E. Rice, Little Rock.
Ass'n Médécalle Veterinaire Française "Laval".....	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo.	Chicago.....	H. A. Smith, Chicago, Ill.
California State V. M. Ass'n.....	.....	San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.....	.....	Ottawa.....	A. E. James, Ottawa.
Chicago Veterinary Society.....	2d Tues. ea. mo	Chicago.....	J. M. Parks, Chicago.
Colorado State V. M. Ass'n.....	.....	Denver.....	M. J. Woodliffe, Denver.
Connecticut V. M. Ass'n.....	.....	.....	B. K. Dow, Willimantic.
Genesee Valley V. M. Ass'n.....	.....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	Dec. 21, 22, 1910.	Atlanta.....	P. F. Bahnsen, Americus
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Illinois State V. M. Ass'n.....	.....	.....	J. H. Crawford, Harvard.
Illinois V. M. and Surg. A.....	Aug. 2, 3, 4, 1910	Anna.....	F. Hockman, Louisville.
Indiana Veterinary Association.....	Jan. 11, 12, 1911.	Indianapolis.....	E. M. Bronson, Indianapolis
Iowa Veterinary Ass'n.....	.....	.....	H. C. Simpson, Denison.
Kansas State V. M. Ass'n.....	Jan. 10, 11, 1911.	Topeka.....	B. Rogers, Manhattan.
Kentucky V. M. Ass'n.....	.....	Not decided.....	D. A. Piatt, Lexington.
Keystone V. M. Ass'n.....	Sept. 13, 1910.....	Philadelphia.....	S. Lockett, Glenolden.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n.....	.....	.....	C. L. Blakely, Augusta.
Maryland State Vet. Society.....	.....	Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	Monthly.....	Boston.....	Wm. T. White, Newtonville.
Michigan State V. M. Ass'n.....	.....	.....	Judson Black, Richmond.
Minnesota State V. M. Ass'n.....	.....	.....	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.....	.....	.....	J. C. Robert, Agricultural Col.
Missouri Valley V. Ass'n.....	Feb, 1911.....	Kansas City.....	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n.....	.....	.....	D. L. Luckey,
Montana State V. M. A.....	.....	Helena.....	W. S. Swank, Miles City.
Nebraska V. M. Ass'n.....	.....	Grand Island.....	H. Jensen, Weeping Water.
New York S. V. M. Soc'y.....	Aug. 25, 26, 27, 10	Ithaca.....	J. F. De Vine, Goshen.
North Carolina V. M. Ass'n.....	.....	.....	Adam Fisher, Charlotte.
North Dakota V. M. Ass'n.....	Jan. 1911.....	Fargo.....	C. H. Martin, Valley City.
North-Western Ohio V. M. A.....	Feb and Nov. in each year.....	Lima.....	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.....	.....	.....	O. V. Brumley, Columbus.
Ohio Soc. of Comparative Med.....	Annually.....	Up'r Sandusky.....	F. F. Sheets, Van Wert, Ohio.
Oklahoma V. M. Ass'n.....	.....	.....	R. A. Phillips, Oklahoma City
Ontario Vet. Ass'n.....	1st week in Aug. each year.....	.....	C. H. Sweetapple, Toronto.
Passaic Co. V. M. Ass'n.....	Call of Chair.....	Paterson, N. J.....	H. K. Berry, Paterson, N. J.
Philippine V. M. A.....	.....	.....	Chas. G. Thomson, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. ea. mo.	Portland, Ore.....	Peter Hanson, Portland, Ore.
Province of Quebec V. M. A.....	.....	Mon. and Que.....	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June.....	Providence.....	J. S. Pollard, Providence
St. Louis Soc. of Vet. Inspectors.....	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo
Schuylkill Valley V. M. A.....	.....	.....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....	.....	Philadelphia.....	B. T. Woodward, Wash'n. D. C.
South Dakota V. M. A.....	.....	.....	J. A. Graham, Sioux Falls.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Iy. Oct.	Los Angeles.....	A. D. Hubbell, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp.....	4th Tues. ea. mo.	407 Ill. Ave.....	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.....	.....	.....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.....	Call Exec. Com.	.....	R. P. Marsteller, College Sta.
Twin City V. M. Ass'n.....	2d Thu. ea. mo.	St. P.-Minneap.....	S. H. Ward, St. Paul, Minn.
Vermont Vet. Med. Ass'n.....	.....	.....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....	.....	.....	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514—9th St., N. W.....	M. Page Smith, Wash., D. C.
Vet. Ass'n of Manitoba.....	Not stated.....	Winnipeg.....	F. Torrance, Winnipeg.
Vet. Med. Ass'n of N. J.....	.....	.....	W. Herbert Lowe, Paterson.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	W. Reid Blair, N. Y. City.
Veterinary Practitioners' Club.....	Monthly.....	Jersey City.....	A. F. Mount, Jersey City.
Virginia State V. M. Ass'n.....	.....	.....	W. G. Chrisman, Charlo'sv'le.
Washington State Col. V. M. A ..	1st & 3d Fri. Eve.	Pullman.....	R. G. McAlister, Pullman.
Washington State V. M. A.....	.....	Seattle.....	I. T. Seely, Seattle.
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo.	Pittsburgh.....	F. Weitzell, Allegheny.
Wisconsin Soc. Vet. Grad.....	.....	Grand Rapids.....	J. P. West, Madison.
York Co. (Pa.) V. M. A.....	Sept 6, 1910.....	York.....	E. S. Bausticker, York, Pa.

## PUBLISHERS' DEPARTMENT.

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